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PALESTINE TRENDS OF POWER

A SURVEY OF THREE THOUSAND YEARS OF PALESTINE HISTORY

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THE establishment of the state of Israel in a part of Palestine was the result among other factors of a rare sequence of favorable constellations in world power. The dissolution of the Ottoman Empire after World War I opened the country to large-scale Jewish immigration. Political growth and consolidation of Jewish power was facilitated by the legal machinery of the Mandate and the military protection of the Mandatory Power. The decline of British control in Asia and her partial withdrawal after World War II gave the newly grown Jewish population an opportunity to assert its independence and attain statehood. Outside the boundaries of the state of Israel a similar process of dissolution and new formation of political forces in the Middle East had taken place from Egypt to India.

Political power as organized by and embodied in states approaches the cause-effect relation near enough to permit representation and classification according to logical pattern and recurring tendencies. An analysis of the rise and fall of Poland, for instance, in the last two centuries would clearly bring out the power constellation of her neighbors as constituting a basic law of her existence. Poland flourished only when her three more powerful neighbors quarreled. It is therefore quite legitimate to ask whether there exist also in the case of Palestine certain trends of power the analysis and study of which may add to our understanding of past and present events in that country.

Palestine is not an area in which political independence thrives, a fact due to geographical factors which will have to be assessed by way of an introduction to the historical part.

Together with Syria, Palestine forms a narrow isthmus of fertile soil which separates the no-man's land of the vast Arabian Desert in the east from the no-man's land of the Mediterranean Sea in the west and which links the Nile Valley and the inhabitable western fringe of Arabia with the centers of cultivation in western Asia. In the form of a two-pronged highroad, one branch running along the maritime plain in the west and the other on the eastern range in Transjordan,[1] the coun-

[1] Referred to in the Bible as "king's highway" (Num. 20:17); see also G. A. Smith, *The Historical Geography of the Holy Land* (1931), p. 48.

try contains the only available land passage for traders and armies moving between Asia and Africa.[2] Large military bodies depending on local supplies and safe lines of communication enter the country either from the north or from the south. The ancient Egyptians, the Fatimids, the Mamelukes, Napoleon, and Allenby came from the south. The Assyrians, the Chaldaeans, Alexander, Pompey, the Crusaders, and the Turks moved in from the north. As for military movement Palestine and Syria have been one of the most heavily loaded army roads of world history. Imperial strategy regarded Palestine not as an object by itself but rather as the only road leading to its objective. Often the armies of world empires crossed and recrossed the country along the plain without molesting the inhabitants of the hilly regions, unless the latter blocked their way. Then the full weight of imperial power was turned against the local obstacle, as was the case in 608 B.C., when Pharaoh Necho II defeated Josiah, king of Judah, though he had not intended to make war against him but only requested a free passage for his army.[3]

The peoples through whose territory the highroad ran had therefore a smaller chance to maintain their independence than those living in the more insular and inconspicuous regions of the hills, which were often by-passed by military forces on the march. For this reason the Philistines, Canaanites, and Israelites enjoyed a shorter span of life than did Judah or the Samaritans. Although military and commercial transit traffic has always been an economic asset, it often is incompatible with political freedom, and Palestine has rarely been politically free and prosperous at the same time.

[2] Ancient transit traffic to Egypt is attested by the narration of Joseph's being sold to the Ishmaelites (Gen. 37:25).

[3] II Chron. 35:21.

The possession of Palestine beyond control of the highway has always been coveted by Egypt for reasons of defense. Whereas even the mechanized forces of Rommel could not force the Western Desert, most successful invasions of the Nile Valley have been carried out by the Assyrians, Persians, Greeks, Arabs, and Turks from the east through Palestine. On the other hand, it has served to keep the Scyths, Mongols, and Tatars out of Africa.

When in 1919 the British Imperial Cabinet discussed the merits of establishing British rule in Palestine, Lord Curzon advocated such a step, arguing: "Hasn't the whole history of the War shown us that Palestine is really the strategical buffer of Egypt?"[4] The same words could have been uttered by all Egyptian rulers throughout the ages. Like the Pharaohs, Roman envoys, caliphs, Mamelukes, and khedives, modern world strategists must seek to defend the approaches to the Canal and Africa in Turkey, in Syria, and, if need be, in Palestine. Such are the dictates of geography.

When imperial power is absent, the great trunk roads become exposed to being cut by sea-borne and desert-borne invaders, who are migrating peoples in quest of pastures and grain, not imperial conquerors seeking roads and fortresses. The pressure from the arid east is permanent,[5] and imperial power with local assistance must guard the highroad territory. When the empires crumble, the no-man's land closes in from either side; the highroad then usually becomes impassable and transit stops. Like that of the Philistines and the Crusaders, the present Jewish migration from the west has been

[4] David Lloyd George, *The Truth about Peace Treaties* (1938), p. 1147.

[5] Attested as early as the Execration Texts in the twentieth century B.C. and as recently as Israel official reports of 1950.

mainly sea-borne also,[6] while the ancient Bedouins, Hebrews, and later the Arabs breaking into the Fertile Crescent have been desert-borne.

Sea and desert are lawless and uncontrollable, in a way even today.[7] They have always sheltered the rebel against superior armies. The Maccabees sought refuge in the safe steppe,[8] while Jewish insurgents in their fight against the Romans took to the sea.[9] At times the local ruler himself turned brigand or co-operated with brigands as in the cases of Raynold of Chatillon, who turned baron robber in the twelfth century,[10] and the Emir Djazzar, who replenished his revenues by making common cause with desert robbers in the eighteenth century.[11]

If a pattern of recurring power types emerges from a historical survey of three millenniums, if the stage and the drama are still much the same and only the actors appear in different attire, it is to geographical position and topographical structure that this striking similarity must be ascribed. The words of the Preacher in Eccles. 1:4 thus assume also geopolitical significance: "One generation passeth away, and another generation cometh: but the earth abideth for ever."

The geographic position of Palestine astride the great West Asiatic highroad assumes historical significance because of the constant attraction the country exerts on imperial power whose presence, decline, absence, and new approach pass over the country like waves of the falling and rising tides. These tides, though lacking the element of predictable regularity, still form a typical pattern, which lends profounder insight into the past and present fate of that area, if power constellations affecting Palestine during the last three millenniums be surveyed along the following lines: (I) the falling tide of imperial power; (II) ebb tide in imperial power; (III) the rising tide of approaching power; and (IV) flood tide.

[6] After the expulsion of the Crusaders the Mamelukes destroyed the coastal towns, including Acre and Beiruth, to deter would-be invaders from the sea by depriving them of potential bases.

[7] Herodotus (iii. 88) and Strabo (*Geogr.* xvi. 1) state that the Persians and Greeks failed to control Arabia.

[8] I Macc. 2:28; 9:33; 9:66.

[9] Flavius Josephus *Wars* iii. 9.

[10] R. Grousset, *Histoire des Croisades* (1936), II, 701 ff.

[11] M. Assaf, *Toldoth Ha-aravim Be-eretz Israel* (1941), II, 114.

I. THE FALLING TIDE

Imperial power holding sway over Palestine declines because of internal troubles and civil strife in the metropolis, because of economic exhaustion, or because of the need to meet a strong enemy elsewhere. The causes of decline are always found outside Palestine. At no time have the resources mustered in the country sufficed to bring about the downfall of the imperial overlord or constituted an essential contribution toward the dissolution of an empire in a way comparable to the success of the Medes and the Chaldaeans in accelerating the collapse of Assyria, of the Persians in overthrowing Babylonian power, or of the Macedonians in reducing Persian rule. It was only when the forces of an empire were dwindling that a local rise meant a serious strain on the already overtaxed imperial strength. On such occasions armed revolt occasionally succeeded in achieving political freedom. Yet in Palestine, more often than to restrain native forces, failing imperial power has to grapple with the invaders ready to move into the country the moment imperial domination becomes vulnerable.

Withdrawing imperial power evacuates minor points first while still clinging to the main strongholds and guarding the chief military roads with a depleted number of

troops. The banner of rebellion is unfolded in the hills, and the first vanguards of the invading host feel their way into the country. Sometimes such periods of dissolution last for centuries, as was probably the case during the centuries preceding the Hebrew conquest in the thirteenth century B.C.; or as it happened during the Ottoman decline in the seventeenth and eighteenth centuries. On other occasions the period of transition may be short, as the years 1945–48 have shown, when the British Mandate was wound up. The long frontiers in the east and west are soon less carefully guarded, and an avalanche of mass incursion follows in the wake of the first daring, infiltrating bands and sweeps away the last rudiments of organized imperial rule.

The three centuries preceding the year 1000 B.C. saw a decline not only of Egyptian but of all imperial power in western Asia for reasons which for the lack of sources are not yet known. When the rule of the Hittites in the north, of the Assyrians in the east, and of the Egyptians in the south simultaneously declined, no new empires appeared on the scene to inherit the lands that were breaking away from the rule of the old. It was into this vacuum that the "peoples of the sea" of Egyptian records in the twelfth century B.C. penetrated from the west also into Palestine. From the east the invasion of the Hebrew tribes described in the Bible had occurred about a century before. Similarly, the Edomites, Moabites, Ammonites, and Aramaeans seemed to have been all on the move, constantly building up pressure from the east on the richer peoples who were living in the more fertile plain. For this east-west movement the Bible offers many an illustration.[12] The constant raids from the eastern steppes gave the people of Israel themselves no rest either, as we learn from the vivid account of such seasonal infiltrations.[13] Similar pressure brought to bear on the Phoenicians is believed to have been the reason why they took to the sea so as to make up in the west for the loss of ground suffered in the east. No movement equaling that from the arid regions of the east is on record as having also constantly occurred from the west in those days.

The next great lull in power which gave an alluring opportunity to an invader came in the seventh century A.D., when, again, two empires lost their defensive strength at the same time and began to shrink, with no clear successor in sight. Once more we witness that phenomenon of simultaneous imperial decline, though this time the cause is less obscure. A hundred years of warfare between the Eastern Empire and the Persian Sassanids had enfeebled both to an extent that their frontiers were giving way to outside pressure. The Slavs were overrunning the northern provinces of the Eastern Empire in the Balkans, while in A.D. 629 reports reached the Emperor Heraclius about Arab movements along the southern border. What at first looked like one of the usual sporadic raids turned out four years later to be organized advance, when three columns were moving from the Hejaz north toward Palestine. Economic hardships rather than religious fanaticism must be regarded as the ultimate cause.[14] As the Arabs were pouring into the fertile belt, General Ser-

[12] Josh. 17:13; also 17:16: "And the children of Joseph said: the hill is not enough for us: and all the Canaanites that dwell in the land of the valley have chariots of iron. . . ."

[13] Judg. 6:3–5: "And so it was, when Israel had sown, that the Midianites came up, and the Amalekites, and the children of the east, even they came up against them; and they encamped against them, and destroyed the increase of the earth, till thou come into Gaza, and left no sustenance for Israel, neither sheep nor ox, nor ass. For they came up with their cattle and their tents, and they came as grasshoppers for multitude. . . ."

[14] Philip K. Hitti, *History of the Arabs* (1943), p. 144.

gius realized too late the seriousness of this many-pronged, synchronized attack of swift cavalry storming Palestine and Syria from several sides. By 642 the vestiges of Greek power had disappeared from Egypt, Syria, and Palestine. The Arab conquest was successful, because, like the Hebrew conquest before, it pushed on into a sphere of dwindling, languid power and was perhaps provoked to attempting an invasion because of the vulnerability of Greek control. Al Baladhuri, the Arab historian of the ninth century, calls the campaign *fatḥ yasīr*, "an easy conquest."

In the eleventh century Arab power in its turn had spent its force, and at once new invaders were hovering around. Nomads broke in from the steppes, the Banu Mirdas in the north taking Aleppo, the Banu-ʾl-Djarraḥ invading Palestine. The breakdown of communication on the roads and the spreading anarchy are reflected in the contemporary letters which were sent from Jerusalem to Cairo by Jewish notables describing their plight and calling for the assistance of their more fortunate brethren in Egypt.[15] An Armenian emir, Badr-al-Jamāli, established his independent rule at Acre and Sidon. A similar process of dissolution can be observed in Damascus, Tyre, and Tripoli, while the governor of the weak Fatimid control contented himself with holding southern Palestine so as to cover the approaches to the Egyptian metropolis. As Fatimid power ended in Egypt and Badr-al-Jamāli set up his rule in the Nile Valley (1074–94), the Seljuk Turks pressed into Syria and Palestine and were kept out of Egypt only with great difficulty. The western invader, the European Crusaders, whose spearheads reached Antiochia in 1097, appeared last on the scene. The first conquest was carried out from the north along the maritime plain between the years 1097 and 1099, but subsequent Crusades in the twelfth and thirteenth centuries became increasingly sea-borne operations, with Tripoli and Acre as bases, since overland campaigns had proved costly and unsuccessful. So the Latin Kingdom, the same as the Semitic states two thousand years before, was founded at a time of a general power recession in the east, with the difference that, instead of coming from the south and east, the men who set up the new kingdom had come from the north and the west.

The next period of marked decline is modern history. The Ottoman Empire in the nineteenth century was subject to the double strain of internal weakness and outside pressure exerted by the European powers. The vanguard of a new western influx into Palestine were Protestant missionaries and visionaries who settled in small colonies during the forties. In the sixties they were followed by German colonists, and from the eighties onward the stream of immigrant Jews made itself increasingly felt. At the beginning of the twentieth century foreign missions, European and American residents and colonists, as well as thousands of pilgrims and tourists, disembarked at Jaffa every year, boosting trade and causing the European red gable of the western colonist to spread through the country. Contrary to the ancient incursions, the main stream this time came from the west, with the pressure mounting toward the east. Again, as already pointed out at the beginning, two imperial powers withdrew, first the Turks, later the British, bringing about a new east-west division of Palestine as it existed in ancient times.

Less in evidence are successful local revolts against a waning power. The rise of the Maccabees is the most notable of the kind. Their enemies, the Seleucids, on bad

[15] A. Yaari, *Igroth Ereṣ Israel* (1943), pp. 66 ff.

terms with the Romans and their eastern allies, were pressed hard by the Parthians, hampered by troubles in Cilicia, and handicapped by internal strife over succession. The epic description of the heroic fight of Mattathias and his five sons which we find in the Books of the Maccabees must be regarded too incomplete and biased an account to serve as a reliable source of information as to the constellation of power in the second century B.C. With the additional evidence of Polybius and Josephus to supplement more data and a wider horizon, it can be seen that the Maccabees eventually triumphed because the forces working at the dissolution of Seleucid power outside Palestine had thrown the Greek government out of gear. The Maccabees, defeated in battle against the Seleucids several times, ultimately gained the day because of their tenacious perseverance to hold out until the rotting realm was entirely moribund.

The revolt against Assyrian domination by King Hezekiah of Judah (720–690 B.C.), which was carried out in alliance with Egypt and Babylonia, came near disaster in 701, when Judah was left alone to face the onslaught of Sennacherib's army. Once more it was tenacity rather than military strength which saved the defenders of Jerusalem. The Assyrians turned their back on the city not because of their military inferiority but because of the necessity to attend to some more serious trouble elsewhere.

II. EBB TIDE

There are four major low-tide periods on record, when foreign strength had finally sunk below native power and new states were set up. Those periods fall between: (1) *ca.* thirteenth and ninth centuries B.C.; (2) second and first centuries B.C.; (3) eleventh and twelfth centuries A.D.; and (4) the twentieth century A.D. None of the independent states established in Palestine ever controlled the whole country, though King Solomon, Alexander Jannaeus, and the Latin Kingdom very nearly united Palestine into a single state.

The term "Palestine" as applied to the country between the Lebanon and the Gulf of Aqaba west of the Jordan is only found in use from the time of the Roman Empire on. Its connotation is purely geographical, as there has never been a Palestinian nation, nor has the term ever been used to denote a single state except in the case of the British Mandate.

The small low-tide states of Palestine and Syria always reflect the topographical features of the region. The country is divided into plain and range units, the Hebrew monarchies entrenched in the mountains, the Philistines and Canaanites living down in the plain, between the Aramaeans northeast high up and the Phoenicians northwest along the coast, the Hasmonaean strongholds in the hills, and the non-Jewish Hellenized population dwelling in the coastal cities,[16] between Moslems and Crusaders; today, between Arabs and Jews, Syria and the Lebanon. Topography is always a prominent factor there.

A striking resemblance may be found between the Latin Kingdom, as it emerged after the Treaty of Jaffa in 1229, and the state of Israel, as it exists today. Both states are based on the coastal strip running from Jaffa to Acre, where both possess their military and commercial centers; both states rely on reinforcements and supplies reaching them from the sea; both, for political and sentimental reasons, control the greater part of Jerusalem but not the whole of it; and both occupy a corridor linking the Holy City with the coastal base.[17]

[16] Dr. A. Tcherikover, *Hayehudim Vehayevanim* (1930), pp. 129 ff., 221 ff.

[17] Grousset, *op. cit.*, III, 306 ff. and map, p. 324.

Left to themselves, the states either expand under strong despotic rule or wither because of civil strife and succession troubles. In the latter case stronger neighbors are wont to intervene by backing up one party, ultimately reducing the stricken state to the role of a vassal. Ancient petty kings of Palestine have had little to choose between being spoiled by neighbors or spoiling them. The other rulers together with the hungry tribes of the steppe would always keep a close watch for the slightest betrayal of weakness. Moments of external peace based on a stable political system and recognized border lines such as we know from European and American history are rare. Consequently, independence and security are maintained at the heavy price of constant military preparedness and armament.

Archeological evidence has confirmed the report of the Bible concerning the enormous building activity of King Solomon, which was not due to self-edification but dictated by the requirements of security. Even the Temple served the safety of the royal dynasty.[18] The mobilization of manpower to forced labor[19] reflected an effort which overtaxed the good humor of his subjects, who complained after the king's death that he had made "their yoke grievous"[20] and whose rejection of the Solomonic monarchy brought about the division of the realm.

The records of King Uzziah of Judah (*ca.* 782–740 B.C.) clearly convey the effort needed in military construction, if security was to be maintained through strength. Harassed by Philistines and southern tribes, the king embarked upon a program of fortification and the development of "engines invented by cunning men" which take up the bulk of the account of his deeds.[21]

Hasmonaean independence (142–63 B.C.) is characterized by wars and party strife, which makes Ernest Renan pass his verdict on that epoch as having been "one of the saddest in history." Eduard Meyer has shown equally little liking for the Hasmonaean state. However, those wars and outrages that so shocked the historians were the direct result of political instability then prevailing in the country, evidence of the anarchy, the constant danger of a war of all against all, which comes in the wake of the disruption of superior power. Even when they were not taking the offensive, as in the time of the Lysias Compromise of 163 B.C., the Jews were surrounded by a general state of insecurity which brought on mass slaughter, surprise attacks of eastern and southern neighbors, with the Bedouins joining in the fray.[22] Again there was little to choose between subjection and conquest. John Hyrcanus (135–104 B.C.) expanded his dominion toward the south and east, Jehudah Aristobulus (104/3) to the north, Alexander Jannaeus (103–76) to the seacoast. The yoke of those rulers was certainly not lighter to bear than that of King Solomon.

By contrast, Ahab of Israel (*ca.* 875–853 B.C.) was bent on trade and peace rather than on conquest, but his northern neighbor, Damascus, was not, and so he died on the battlefield.

The fate of the Latin Kingdom also demonstrates that, once military alertness gives way to softer inclinations, the state begins to shrink. In the second half of the twelfth century the fighting spirit left the Franks, and soon they began to give way before the mounting pressure from the east.

[18] W. F. Albright, *From Stone Age to Christianity* (1940), p. 225.

[19] I Kings 6:13–18.

[20] I Kings 12:4.

[21] II Chronicles, chap. 26.

[22] II Macc. 10:15; 12:3 ff.; 12:10 ff.

Historical evidence at our disposal shows that such peaceful spells as the reign of Queen Salome Alexandra (76–67 B.C.) are the exception rather than the rule, and even she was threatened by an Armenian invasion from the north which had to be bought off at a heavy price.

Is Palestine again passing through a phase of power ebb today? The apparent similarity between the power constellation, as it existed when the ancient Hebrew monarchy was set up, and the present lineup of powers requires a certain modification. While in the days of Saul and David there was no imperial power left to make its influence felt, if it so chose, the present position bears a stronger resemblance to the situation with which the Maccabees were confronted.

When in the second century B.C. Jewish independence was restored, Carthage and Greece had been vanquished by the Romans. Asia Minor and the Aegean had come within the orbit of Roman influence. In 169 B.C. the word of a Roman envoy had sufficed to force Antiochus Epiphanes out of Egypt. The only formidable empire left in the field was Parthia in the east, which under Mithridates I (171–138 B.C.) was advancing toward the west, pushing Seleucid control out of the region east of the Euphrates.

Just as today the United States and the Soviet Union are in a position to occupy western Asia, Rome could have conquered Palestine and Syria already after the Battle of Magnesia in 190 B.C. Yet the Romans were reluctant to succeed to the former dominions of Alexander the Great in the East and to accept direct military and political responsibility there; neither is the United States prepared to inherit all the responsibility in western Asia relinquished by Great Britain. Like America, the Romans contented themselves with treaties of friendship and indirect influence. Thus they concluded a treaty also with the Maccabees,[23] a step which they deemed to be a sufficient guaranty for the preservation of Roman interests in Palestine. Today, the power ebb, as in the Hasmonaean days, exists *de jure* more than *de facto*. The best proof is the fact that wars between the smaller Asiatic states can no more run their free course but are controlled behind the scenes by world powers, whose envoys and notes, as in the second century B.C., must be respected. It may, therefore, be maintained on these grounds that Palestine and western Asia have actually entered a new phase of a rising tide. Before this be decided, that phase must be considered more fully.

III. THE RISING TIDE

When an approaching power casts the shadow of its rule over the country, the political forces inside the small states begin to stir and to array themselves like iron dust at the approach of a magnet. The best symptom for the presence of superior forces in the neighborhood or for the rise of imperial power in the world is the formation of parties seeking spiritual and political contact with that new rising star. Palestine states face superior power either in the north or in the south or in both directions at the same time. Even when the true imperial center lies elsewhere, the gravitational pull is transmitted either from the north or from the south, the direction of the main lines of communication. Thus the Maccabees, as pro-Romans, were a south-party, the Hellenized Jews a north-party, with their alignments to the Ptolemies and Seleucids, respectively.

The split into parties is already evident at the approach of Assyrian power. Ashurnasirpal II (884–859 B.C.) so rapidly overran Syria and broke through to the Medi-

[23] I Macc. 15:16–24.

terranean that the existence of a pro-Assyrian party is strongly suspected.[24] In the eighth century pro-Egyptian and pro-Assyrian parties are mentioned by Hosea.[25] When King Ahaz of Judah (736–717 B.C.) refused to take part in an anti-Assyrian alliance of other states in his neighborhood including Israel, his refusal naturally increased the ties between the court of Jerusalem and Nineveh, a fact which outraged the priests, who took up an anti-Assyrian attitude.[26] Later Hezekiah of Judah (720–690) was in favor of an anti-Assyrian constellation relying on Egypt, a course bitterly opposed by Isaiah, who was probably not alone in his desire for peace.[27] At the approach of the Chaldaeans, a hundred years later, it was Jeremiah who represented the pro-Chaldaean group, whereas the official policy was still pro-Egyptian. When events favored the Chaldaean side, the king became afraid of the revenge of the opposition which he had persecuted before and appealed to Jeremiah for assistance.[28] Already in those days the prophet used the simile of the rising flood, "an overflowing flood,"[29] when speaking of approaching imperial power.

Josephus gives a detailed account of party strife in Judah in the second century B.C. Antiochus Epiphanes (175–164) is related to have taken Jerusalem without battle, "those of his own party opening the gates for him."[30] Also the approach of Pompey in 63 B.C. makes one group think "it best to deliver up the city to Pompey."[31] It is estimated that in the war against Rome (A.D. 66–70) forty thousand Jews went over to the Romans out of the besieged city of Jerusalem.[32] Josephus himself is the most notable Roman partisan who was almost killed for his pro-Roman propaganda before the walls of the city.

The Latin Kingdom in its declining years also reflected world powers and neighboring forces in the manner in which party issues were being fought out. At the death of Baldwin V in 1186 the crown of Jerusalem was passed on to Guy de Lusignan, a procedure challenged by Raymund of Tripoli, who had no scruples to ally with Saladin, then the rising power in the east. Saladin's dominions were already engulfing the Latins from all sides. A year later, as Saladin was advancing through the collapsing Latin Kingdom, the roles were reversed. Guy de Lusignan and the Templars constituted the pro-Saladin party working for the Sultan in southern Palestine,[33] and in Jerusalem the champions of Saladin, mainly Greeks led by a Joseph Batit, promised to open the gates and to stab the Franks in the back.

The conflict between Pope and Emperor in the thirteenth century split the Christians of Palestine into two hostile camps. The political arrangement of the Emperor Frederick II (1212–50), based on an understanding with Egypt, was supported by the Teutonic Order and the pilgrims but was opposed by the Latin Patriarch, the Archbishop of Caesarea, and the Templars, who consequently inclined toward Syria, the power in the north, a pattern reminiscent of the Hasmonaean period. Party feud was continued also after the emperor had left Palestine in 1229. The Templars provoked a rupture between the Latin Kingdom and Egypt by an attack on Nablus, and in

[24] S. Smith, *Cambridge Ancient History*, III, 15.

[25] Hos. 7:11.

[26] II Chron. 28:16–25. [27] II Kings 20:19.

[28] Jer. 38:19: "I am afraid of the Jews that are fallen to the Chaldaeans lest they deliver me into their hand and they ill-treat me."

[29] Jer. 47:2.

[30] *Antiquities* xii. 5. [31] *Ibid.* xiv. 5.

[32] A. Büchler, "Jews' College Publication," No. 4, p. 67.

[33] Grousset, *op. cit.*, II, 807 ff.

1243 the Guelfs, the party opposing the emperor, carried the day. The allegiance of the kingdom to the Hohenstaufen was denounced and the system of alliances reversed. Syria took the place of Egypt, which turned out to be a fatal move and contributed to the final defeat of the Franks.

The political lineup of the modern parties in Palestine and the Levant again indicates a tendency of becoming susceptible to outside power gravitation which may serve as an additional indication that the low-tide mark has already been passed, and, therefore, the problem of how to meet rising power deserves attention.

Relations with rising empires, where indifference is no longer possible, may be either hostile or co-operative, even friendly. Again an interesting topographical difference is noticeable here. The inhabitants of the hills are more inclined toward resisting foreign power than the trading centers in the coastal plain. But whereas armed rebellion and guerrilla warfare have occasionally succeeded—the Maccabees, Zenobia of Palmyra, local emirs, Zahir al-Omar, Arab insurgents, Haganah, terrorists all were matched against declining force—in the phase of a rising tide all armed resistance must collapse and lead to the destruction of the rebels and their country. Pekah (737–732 B.C.) of Israel was no match for the Assyrians who in 732 B.C. reduced his realm to insignificance. The unsuccessful rise of Hosea (733–725 B.C.) sealed the doom of Israel. Against Babylonia, Jehoiakim and Zedekiah were equally unsuccessful. Realm and ruler came to grief in 586 B.C. The insurrection of the Zealots against the Romans (A.D. 66–73) and the rise of Bar Kochba (A.D. 132–35) resulted in the liquidation of the Jewish population of Palestine as a significant group. Again, the rise of the Syrians against Abbassid rule led by Ali-ibn-ʾAbd-Allah-al-Sufyāni (A.D. 809–13) was in vain, and the black banner of the Abbassids triumphed. Christian attempts to establish independence in the Lebanon (A.D. 759/60) also came to nothing.

The other alternative open to the peoples of the Fertile Crescent at the approach of the flood is to make the best arrangements for shelter while it lasts, which is the advice given by Isaiah in the days of the Assyrian conquest[34] and the policy advocated by Jeremiah in the face of superior Babylonian power.[35] The prophets have the well-being of their people more at heart than the survival of political independence which they know will be temporarily lost.

Under Persian hegemony Nehemiah, too, pursued a policy which was constructive despite its obvious political limitations. He never attempted to oppose the over-all political structure which contained Judah as a mere county within the fifth satrapy, which, according to Herodotus, included Syria, Palestine, and Cyprus.

Herod (37–4 B.C.), though he was an unpopular king, was highly successful in his shrewd foreign policy. He understood the supremacy of Roman power and its intricacies. Josephus reports him as having stated the pivot of his foreign policy to be "at amity with and well regarded by the Romans, who are the rulers of the whole world."[36] Even if Josephus had invented that utterance to flatter the Roman reader of his time, it would have been valid, since Herod always acted in accordance with that maxim. He was what today would be called a Roman "satellite," and

[34] Isa. 26:20: "Come, my people, enter thou into thy chambers, and shut thy doors about thee: hide thyself for a short while, until the wrath be overpast."

[35] Jer. 27:11: "But the nations that bring their neck under the yoke of the King of Babylon, and serve him, those will I let remain in their own land, saith the Lord; and they shall till it and dwell therein."

[36] *Antiquities* XV. 11.

he knew it. His skill always to pick the winner in time kept his country outside the hazards of the Roman civil war and must be reckoned to his credit, however loathsome his general conduct of affairs might have been.

Once more the Emperor Frederick II must be mentioned in this connection. Perceiving the limited resources of the Latin Kingdom, he came to an agreement with the Ayyubite Malik al-Kāmil of Egypt, hoping to inaugurate thereby an entente with Egypt, which under Mameluke rule was destined to become a rising power in the thirteenth century. The emperor's enemies within the kingdom and outside grudgingly had to admit that by this understanding Frederick had achieved more than all the Crusades had done since 1187, namely, the return of most of Jerusalem and Bethlehem to Christian suzerainty.[37]

IV. FLOOD TIDE

When at last the waters of the high tide submerge the country, the history of Palestine ceases. High-tide periods are characterized by the scarcity of local and foreign records. The country is then usually garrisoned by foreign legions, the roads are secure and well guarded, invaders are kept out, and the threat of war no longer prevails. The burden of taxation is often heavy, but with the expansion of trading space and the increased security of life and property, high-tide prosperity of trade and commerce is frequent. Traveling becomes safe, and, like Paul of Tarsus, the inhabitant of the Levant could go to Greece, Italy, even cross Asia Minor on foot or horseback in Roman times. As Roman citizen by virtue of the *Lex Antonina* (A.D. 212) he saw his chances for a political and administrative career brightening in addition to commercial opportunities. The Roman peace reached far into the lawless desert, which in Palestine is proved by the presence of unprotected Roman villages thirty miles south of Beersheba.[38]

Middle East trade flourished especially in the Hellenistic epoch following the conquest of Alexander, but only the Roman Empire secured the acceptance of the aureus as standard world currency acceptable to the merchants of Ceylon as well as to the traders of Scandinavia.[39] Though long-distance trade carried out by Palestine and Syria is believed to have declined during the Roman period compared to the Hellenistic era, mass export to Egypt and Italy, the chief customers of Palestine, was maintained in addition to a brisk exchange of goods among the countries of the Levant area themselves.[40] Under the Umayyads another period of prosperity followed when Palestine was part of the chief center of the first caliphs. With Damascus as metropolis, administrative, military, and commercial privileges must have been considerable, as the subsequent rises of the jealous Syrian population against Abbassid rule seemed to prove, when the center of gravity moved to Baghdad, depriving Syria of her favorite position.

Evidence for the prosperity of Palestine under the rule of the Burdji-Mamelukes (1382–1517) is found in a letter written by R. Yitshak b. Meir Latif. Describing his trip to Jerusalem in the fifteenth century, he mentions the constant stream of pilgrims arriving at Jaffa, the good relations existing between Arabs and Jews, and the well-tilled

[37] Except the Haram esh-Sharif, which contains the Moslem shrines of Jerusalem. See also above, p. 6.

[38] Smith, *op. cit.*, p. 281.

[39] F. M. Heichelheim, *Wirtschaftsgeschichte des Altertums* (1938), I, 682 ff.

[40] W. F. Albright, *The Archeology of Palestine* (1949), p. 170, regards the Antonine period (A.D. 138–61) as having been "the most flourishing age of pagan Syria and Palestine."

fields.[41] This is borne out by R. Obadya, of Bertinoro, who reached Palestine safely on the overland route across the desert from the south. He also confirms the friendliness of the population toward foreigners and Jews.[42]

Spanish Jews who immigrated into Palestine in the sixteenth century testify to the prosperity of the country immediately after the Ottoman conquest and urge their relatives abroad to join them in Palestine.[43]

The subsequent decline of Ottoman control brought in its train brigandry and stagnation, especially in the eighteenth and the beginning of the nineteenth centuries, so that the Egyptian conquest of 1831 was greatly welcomed by the local population. Again security and stability were greatest immediately after the conquest.[44]

Within living memory Palestine passed through two periods of material well-being and peace. The first period was during the reinforced Ottoman authority in the two decades preceding the first World War, when, as a result of increased European trade and encouraged by the visit of the German emperor in 1898, tourists, pilgrims, and merchants brought expanding commerce and rising import and export figures. The first World War put an end to the boom, which, however, returned with the rise of Jewish mass immigration and the influx of Jewish capital from 1932 on and reached its peak during the second World War, when Palestine served as a military supply and communication center of the Allies in the Middle East.

Thus in the days of Persian, Greek, Roman, Arab, Mameluke, Ottoman, and British rule at the high-water mark, the population of Palestine was occasionally compensated for the loss of political independence by the material benefits of prosperity and security. Geography explains that fact, because Palestine only functions as a military and commercial transit center when it is part of an imperial system of communication. The attempt to combine political independence with wide trading space and security, which are essential for economic progress, through adopting a form of western Asiatic federation has so far never been made.

Political power is a fleeting thing. The seer of low-tide times predicting a new flood and the prophet of high-tide periods comforting his people with the prospect of the restoration of political freedom have the verdict both of geography and of history on their side. There is hardly a country like Palestine where political independence has been followed by conquest and where conquest triumphant in its turn has vanished in so continual a succession. Full adaptation of the peoples of Palestine and surrounding countries to the logic of their geographical and historical conditions will only be fully achieved once the words of the Preacher could also read: "One power passeth away and another power cometh: but the people abideth for ever."

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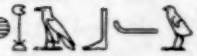
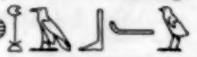
[41] Yaari, *op. cit.*, p. 94. [42] *Ibid.*, pp. 98 ff.

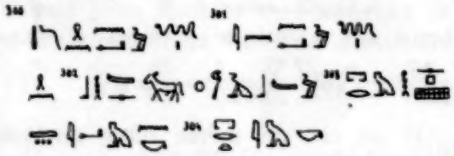
[43] *Ibid.*, p. 181: "A good country where nothing is missing, rich in bread, meat, wine, and fruit."

[44] A. Yaari, *Zikhronoth Erets Israel* (1947), I, 109: "A little girl could set out on the road with gold sovereigns in her hand without being accosted or molested by anybody."

SUR LE MOT  (PYR. § 225 b, W., Col. 302)

PIERRE LACAU

PARMI les nombreuses formules qui, dans la Pyramide d'Ounas, sont destinées à protéger le roi mort contre les serpents, il en est une qui contient un mot:  dont l'interprétation a embarrassé les traducteurs. Voici le passage en question (§ 225 = W., col. 300–304):

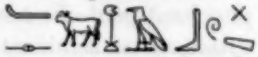


Les différentes traductions dont j'ai connaissance sont les suivantes:

G. Maspero, *Recueil de Travaux*, III (1882), p. 220: «S'enroule le serpent: c'est le serpent qui s'enroule autour du veau. O hippopotame sorti du bassin terrestre, tu as mangé ce qui sort de toi». Nous verrons que le mot «hippopotame» est bien reconnu ici, mais le mot «veau» en est séparé à tort.

F. Lexa, *La Magie dans l'Égypte ancienne*, II (1925), p. 3: «Enroule-toi, serpent! crie le serpent—Enroule-toi autour du petit de l'hippopotame qui est sorti du marais! Terre! Engloutis ce qui est sorti de toi!» Le «petit de l'hippopotame» est le terme exact correspondant à la traduction du groupe *bḥs ḫ>bw*, que seul Lexa a reconnu.

L. Speleers, *Traduction des Textes des Pyramides* (1934), p. 37: «A dire: un serpent est encerclé par un serpent. Est enlacé le jeune du *ḫ>bw*, sorti de la prairie. (O) terre! Dévore ce qui est sorti de toi!» Le *ḫ>bw* serait donc un animal, ce qui est juste, mais dans son vocabulaire, Speleers le traduit par: «veau», simple distraction, sans doute.

K. Sethe, *Uebersetzung und Kommentar zu den altaegyptischen Pyramidentexte*, I (sans date), p. 173. «Umschlungen werde die eine Schlange (*n<w*) durch eine (andere) *n<w*, wenn das zahnlos Kälbchen umschlungen wird, das auf dem Weidegrund herausgekommen ist. Erde, verschlucke dir, was aus dir hervorgekommen ist». Et il ajoute: «étant donné que l'adjectif *ḫ>bw* est déterminé par le veau et que l'expression  s'applique à un veau nouveau-né dans le Papyrus Smith, 19, 15 («la bouche d'un *bḥs ḫ>bw* quand il sort du corps de sa mère»), cet adjectif ne peut que signifier: «dépourvu de dents». Il s'agit de protéger le veau qui tète contre le danger de la morsure des serpents, comme l'est un petit enfant, dans les formules de tant de textes magiques». *H>bw* est donc considéré comme un adjectif, dont le sens demeure une simple conjecture.

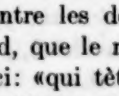
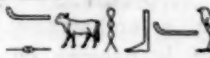
Voici le texte du Papyrus Smith (1930) auquel Sethe se réfère, avec la traduction qu'en donne Breasted (6ème incantation, pl. XIX, 15):

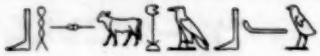
"The mouth of this man who is under my fingers, and so forth, is the mouth of a (hungry) calf, when he comes forth from his mother's womb."

Le mot *ḫ³bw*, dit Breasted, fait difficulté. C'est un mot rare et ancien, connu seulement par Pyr. § 225 b. L'emploi du mot *bḥs* dans *bḥs ḫ³bw* est à rapprocher de celui du même substantif dans Pyr. § 27 d (W 20): «ta bouche est la bouche d'un veau de lait le jour de sa naissance»[1]. Le parallélisme existant entre les deux textes suggère, dit Breasted, que le mot *ḫ³bw* veut peut-être dire ici: «qui tète». D'après l'égyptologue américain, *ḫ³bw* serait donc un adjectif—dont le sens demeure conjectural.

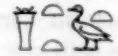
Tel est l'état de la question. L'orthographe du mot *ḫ³bw*, dans les doubles du passage des Textes des Pyramides cité plus haut peut-elle nous donner une indication sur sa signification?

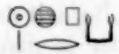
La version d'Ounas n'a pas de correspondant dans les pyramides de la VI[e] dynastie. Elle ne paraît pas non plus dans les pyramides des reines contemporaines de Pépi II: Neit, Apouit, Oujebten, ni dans celle du roi . Mais on la retrouve sous la XII[e] dynastie dans les textes religieux qui garnissent les chambres funéraires suivantes:

1°  à Qattah[2]. Le texte est incorrect:  [3]

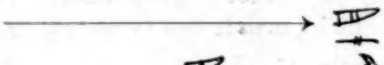
2° à Licht[4]. Le texte est identique à celui d'Ounas: 

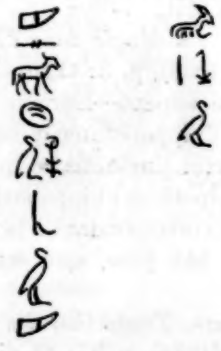
Il en est de même dans quelques «Textes des Sarcophages»:

1°  à Saqqarah[5]

2°  à Saqqarah[6]

3° à Meir[7]

4° à Thèbes[8] 

5° à Thèbes[9] 

[1] Cette formule se retrouve dans les nombreux exemplaires du Rituel de l'Ouverture de la bouche.

[2] E. Chassinat, *Fouilles de Qattah* (1906), p. 65.

[3] Dans le pour est-il une faute d'édition ou traduit-il un changement phonétique réellement accompli sous la XII[e] dynastie, dans la localité de Qattah?

[4] W. C. Hayes, *The Texts in the Maṣṭabeh of Se'n-Wosret-ʿAnkh at Lisht* (1937), pl. X, l. 474.

[5] Caire 28034, côté 3, l. 1–3 = Maspero, *Trois années de fouilles*, dans «Mém. Mission Caire», I, p. 225, l. 2.

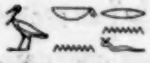
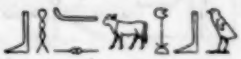
[6] Caire 28036, côté 3, ll. 1–4 = *ibid.*, p. 236, ll. 2–3.

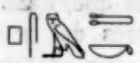
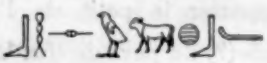
[7] Caire 28037, côté 3, l. 39 = Lacau, *Sarcophages antérieurs au Nouvel Empire*, p. 113. Ce texte me manque.

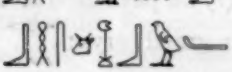
[8] Au musée de Berlin = Lepsius, *Aelteste Texte des Todtenbuchs*, pl. 15, l. 67.

[9] Au musée de Berlin = *ibid.*, pl. 35, ll. 2–3.

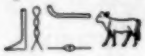
Enfin notre texte figure dans deux tombes et sur un sarcophage de la XXVI^e^ dynastie:

1°  à Saqqarah[10] 

2°  à Saqqarah[11] 

3° Sarcophage du musée de Stockholm[12] 

Toutes ces orthographes, d'époques très différentes, ne nous éclairent pas le mot *ḫ³bw*; il s'agit de copies d'une formule consacrée, qui se répètent sans changement.

Examinons d'abord le mot *bḥs*. Lexa a vu juste; il désigne ici le «petit» de l'animal *ḫ³bw*, mais ce sens nouveau de «petit d'un animal» donné au substantif  qui, normalement, veut dire «veau», doit être démontré. Cette démonstration apparaît très clairement dans une scène du mastaba d'Idout (pl. XX), à Saqqarah—fort bien publié et commenté par Macramallah[13]. Le mot *bḥs*, ici, est précisé par l'image qu'il accompagne, dans une phrase destinée à commenter, comme d'habitude, la scène représentée (fig. 1).

Un homme apporte au mort un jeune oryx de petite taille, qu'il tient dans ses bras et dont il serre le museau dans sa main droite pour l'empêcher de crier. Derrière lui, un autre homme conduit un grand oryx mâle[14] qu'il tient d'une main par les cornes et qu'il tire de l'autre par une laisse entourant le cou de la bête.

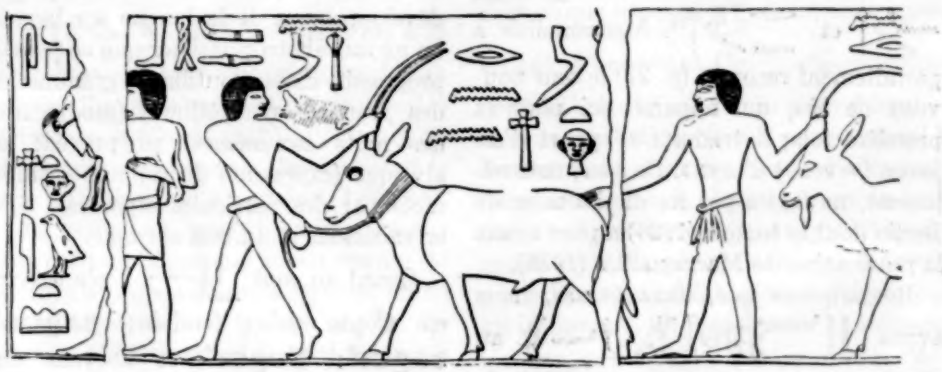


FIG. 1

Un troisième personnage pousse l'oryx par derrière. Ce grand oryx, pour le dire en passant, a une allure fort tranquille qui surprendrait si nous ne savions que les Égyptiens élevaient à l'état domestique cette grand antilope du désert[15].

[10] Lepsius, *Denkmäler*, III, pl. 262 c. Lepsius donne un texte qui est évidemment erroné, mais le texte original se laisse rétablir aisément.

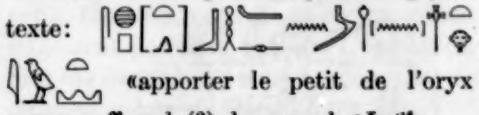
[11] Daressy, *Recueil de Travaux*, XVII (1895), p. 20, ll. 53–54.

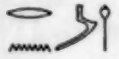
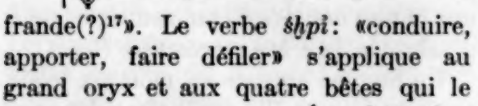
[12] Piehl, *Petites études égyptologiques*, p. 33.

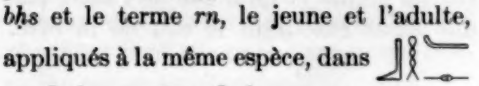
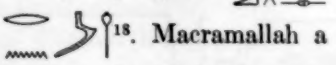
[13] R. Macramallah, *Fouilles à Saqqara. Le mastaba d'Idout* (Le Caire, 1935).

[14] On attendrait une femelle qui suivrait son petit porté devant elle, mais tous les autres animaux présents sont des mâles. Réservait-on les femelles pour la reproduction ou bien y a-t-il une raison religieuse à l'emploi des mâles pour la nourriture?

[15] Cl. Gaillard, «Les tâtonnements des Egyptiens de l'Ancien Empire à la recherche des animaux à domestiquer», *Revue d'ethnographie et de sociologie*, III (1912), 329–348.

Au dessus du premier personnage, ce texte:  «apporter le petit de l'oryx comme offrande(?) du pays de *Iwt*[16]».

Au dessus du grand oryx:  «l'oryx adulte(?) pour l'offrande(?)[17]». Le verbe *šḫpi*: «conduire, apporter, faire défiler» s'applique au grand oryx et aux quatre bêtes qui le suivent dans ce registre ().

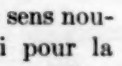
Il est clair que nous avons ici à la fois parallèlisme et opposition entre le terme *bḥs* et le terme *rn*, le jeune et l'adulte, appliqués à la même espèce, dans  et  [18]. Macramallah a parfaitement reconnu (p. 27) le sens nouveau de *bḥs*, qui apparaît ici pour la première fois; il traduit: «l'apport d'un jeune (=veau) d'oryx». Ce sens, naturellement, ne figure pas au dictionnaire de Berlin dont le tome I (1926) a paru avant la publication de Macramallah (1935).

Remarquons que, dans Ounas, nous avons au génitif direct (état construit) et dans Idout au génitif indirect. Ne peut-on supposer que, dans le décor des tombes, les titres des scènes sont rédigés en langue courante de la VI^e^ dynastie, celle même des ateliers qui ont décoré le tombeau? A cette époque, l'usage du génitif indirect s'était très largement répandu, s'il n'était pas même exclusif de l'autre, dans le langage parlé. Au contraire dans la formule ancienne d'Ounas, nous avons la construction par le génitif direct, procédé certainement plus ancien. Je crois que Sethe a raison de considérer l'emploi du génitif indirect à la place du génitif direct comme un élément de classement chronologique entre les différents chapitres des Pyramides. C'est en effet une des caractéristiques du développement de la langue sur laquelle on ne saurait trop insister que ce passage progressif dans l'outillage grammatical des procédés synthétiques (modification des mots eux-mêmes) au procédé analytique (expression du rapport entre les mots par des particules séparées). Nous en saisissons là un bon exemple.

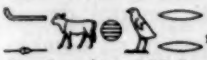
Quant au mot , il n'a survécu en Copte qu'au féminin: ⲃⲁϩⲥⲉ^S^: ⲃⲁϩⲥⲓ^B^: ⲃⲉϩⲥⲓ^F^ et il veut dire uniquement: «génisse[19]». Le sens: «petit d'animal» a disparu. Dans la langue ancienne, nous avons seulement un «jeune d'hippopotame» dans les Pyramides et le Papyrus Smith. Ce sens était peut-être en voie de disparition sous la VI^e^ dynastie, mais c'est sans doute par hasard que nous n'avons aucun exemple de cet emploi à l'époque classique. Notons toutefois, dans le Livre des Morts, chapitre 109, le

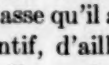
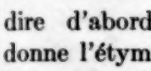
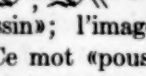
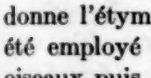
[16] Je ne sais rien du pays *Iwt* et je ne traduis que d'une manière très générale le terme technique *Ngt-ḫr*. C'est une catégorie d'offrandes ou de présentation d'offrandes à préciser.

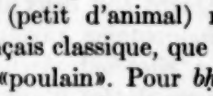
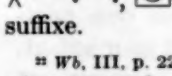
[17] Remarquons que, comme toujours, les deux mots *bḥs* et *m³ ḥḏ* se passent de signe-mot, puisqu'ils accompagnent leur représentation (à grande échelle), qui en tient lieu.

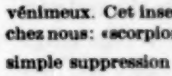
[18] Nous avons le génitif indirect dans *bḥs n m³ ḥḏ*. Dans nous devons avoir le même construction mais c'est un procédé d'écriture bien conne que d'écrire une seule fois deux lettres qui se suivent (Erman, *Aegyptische Grammatik*⁴, § 129). La chose est très fréquente avec le mot *rn* suivi de la préposition *n*. Il y a mieux: dans l'orthographe  la métathèse initiale n'est-elle pas due au fait que l'on aurait eu, autrement, trois *n* de suite, difficilement prononçables (*rn* + *n* + *ni*^{c}*w*)?

[19] Le masculin devait être du type *ⲃϩⲥ. Nous avons en effet la même formation dans ⲟϩⲥ (masculin), ⲟⲁϩⲥⲉ (féminin), «gazelle».

nom d'une des «âmes de l'Orient»  , «le petit(?) du *ḫwrr*[20]». Ce chapitre 109 figure dans les Coffin Texts (tome II, 372 a) où nous avons quatre fois . S'agit-il bien d'un animal, plus particulièrement d'un oiseau? En ce cas le mot *bḥs* désignerait le petit d'un animal, à quelque classe qu'il appartienne.

Un autre substantif, d'ailleurs, sert à désigner le «petit» d'un animal (en général). C'est le mot  qui veut dire d'abord: «poussin»; l'image, ici, donne l'étymologie. Ce mot «poussin» a été employé pour définir les jeunes des oiseaux puis, (au Nouvel Empire), ceux des animaux les plus variés: chien-loup  , gazelle  , crocodile  [21]. Là, nous assistons à la généralisation progressive d'un emploi, en partant d'un sens précis et particulier. Un dérivé de «pullus» (petit d'animal) ne désigne plus, en français classique, que le petit du cheval, le «poulain». Pour *bḥs*, avons nous un sens premier: «veau» (=le petit du boeuf) qui aurait ensuite été employé à propos d'autres espèces, ou au contraire avons nous le sens général de: «jeune animal» qui plus tard se serait spécialisé en s'appliquant uniquement au jeune taureau? Au point de vue étymologique, il faudrait pouvoir préciser.

Le mot  désigne l'hippopotame. C'est un des noms de l'animal; il en a beaucoup. Normalement, il devrait être accompagné de son signe-mot [22] mais, dans Ounas, il est tout-à-fait normal que celui-ci n'apparaisse pas; beaucoup d'être vivants sont supprimés dans les textes des Pyramides de Saqqarah et l'image de l'hippopotame était sans doute particulièrement funeste. Or nos copies du texts d'Ounas ont toutes été employées dans des chambres funéraires ou sur des sarcophages; il n'y avait pas lieu de rétablir le signe-mot primitif dans de pareils textes. Le signe qui accompagne la lecture *ḫ³b*, c'est la dent courbe de l'hippopotame. Ce signe remplace fort bien l'image indésirable de l'animal lui-même, dont il est homophone[23], et le nom de l'animal vient, précisément, du nom de la dent. Qu'il s'agisse d'un homophone, c'est ce que prouve le final, écrit après la dent, et non avant. Ce , c'est le suffixe nominal *w* qui a joué un rôle si considérable dans la dérivation. Il sert entre autres à former beaucoup de noms d'animaux, noms relativement récents, ayant un sens possible à déterminer, parce que lié à une racine verbale—par opposition à d'autres noms d'animaux, très anciens et d'étymologie inconnue[24]. Ici *ḫ³bw* signifie: «l'animal à dent courbe»; on comparera ,  etc., tous dérivés en *w* suffixe.

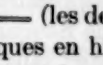
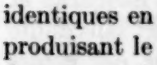
[20] Ce mot se retrouve peut-être aux Pyramides (sans signe-mot) §§ 161 à 166: (on comparera:  , «pélican», §§ 226, 435, 671, 680). Ce serait un diminutif par redoublement de la 3e radicale, formation fréquente dans les noms d'animaux (*Ḫprr*, etc.), que j'avais signalée dans *Recueil de Travaux*, XXXV (1913), p. 228 (à propos de *ḥfnn*, «têtard»).

[21] *Wb*, V, p. 340.

[22] *Wb*, III, p. 229, ou le mot *ḫ³bw* (dont la lecture est accompagnée d'un point d'interrogation) est séparé du mot *ḫ³b*, «hippopotame».

[23] Dans les Textes des Sarcophages, le nom du scorpion est suivi de l'image, non du scorpion lui-même, mais de la nèpe , qui n'a pas de crochet vénimeux. Cet insecte devait porter le même nom que chez nous: «scorpion d'eau». J'avais pensé autrefois à la simple suppression du crochet dans ; cf. *ZÄS*, LI, 49 et 57 et Gardiner, *Egyptian Grammar*, Sign List L7.

[24] Ces derniers sont fréquents dans toutes les langues; il s'agit alors des noms des animaux les plus courants.

Dans le Papyrus Smith, nous avons une orthographe d'apparance anormale: avec deux déterminatifs, mais le signe en réalité doit se transcrire (les deux signes en question sont identiques en hiératique; les planches reproduisant le papyrus le montrent bien). Quant au signe × qui précède le , c'est un déterminatif d'ordre général, caractérisant le sens du radical *ḫ³b*. Il est attaché à ce sens, mais il est précisé lui-même par la dent qui le suit. C'est ainsi que, dans ce même papyrus, nous avons  avec un double déterminatif. exprime le sens général de: «passer à travers, en marchant», qui est précisé par ○ pour dire: «forer un trou[25]». Le déterminatif *particulier* suit le déterminatif *général*. Evidemment, on aurait pu, aussi, se servir du déterminatif général des quadrupèdes, , qui est employé dans le Papyrus Smith pour le mot  : 14, 16; 16, 11.

La portée de la formule Pyr. § 225 b demeure pour nous aussi peu claire qu'avant, mais notre première préoccupation, dans l'étude de toutes ces «recettes» religieuses, c'est d'abord d'établir le sens exact de chacun des mots qui y figurent. La signification de l'ensemble du texte, au point de vue religieux, n'en sera peut-être pas dégagée directement pour autant, mais le seul moyen d'y parvenir est d'abord de partir du sens premier des mots.

La monographie de l'hippopotame reste à faire. Certainement un animal aussi particulier devait être muni de vertus magiques toutes spéciales. Rappelons son rôle dans les accouchements et sa place (avec une queue de crocodile, ce qui devait compliquer encore son action) au nombre des constellations du ciel. Il serait intéressant aussi de rassembler ce qui a pu être recueilli sur le folk-lore actuel de cet animal dans la région du Haut Nil et ailleurs en Afrique. Certaines idées, toujours très vivantes à présent, nous éclaireraient sans doute quelques croyances anciennes.

Que la bouche de l'hippopotame «de lait» soit d'une pureté particulière, est-ce que cela ne serait pas dû au fait que la mère hippopotame met son petit au monde sous l'eau? Les anciens Égyptiens avaient parfaitement observé le fait. On voit cet accouchement sous l'eau figuré sur les bas-reliefs de l'Ancien Empire[26]. Cette naissance assez surprenante ne pouvait manquer d'avoir une signification particulière pour les Égyptiens et d'avoir fait de leur part l'objet d'une interprétation spéciale[27].

Quant aux deux défenses courbes de l'hippopotame, auxquelles il doit son nom *ḫ³bw*, elles ont sûrement été considérées comme dotées d'une puissance magique particulière. Rappelons nous les bâtons magiques, qui vont par paires (comme des castagnettes) et sur lesquels est gravée une série de figures protectrices alignées sur une des faces de chaque bâton. Une étude de ces figurations nous donnerait certainement quelques indications intéressantes. Ce que nous devons retenir, c'est que ces bâtons sont formés des deux grandes dents courbes qui sortent de la mâchoire inféreure de l'hippopo-

[25] Le sens tout matériel et technique de «forer un trou» (dans le crâne du patient) a dû précéder celui de «traverser en marchant».

[26] Par exemple: Macramallah, *Le mastaba d'Idout*, pl. V (en bas) et VII (en bas).

[27] Les narines de l'hippopotame adulte se referment comme deux clapets hermétiques, ce qui lui permet un long séjour sous l'eau. Au moment de la naissance, les narines du petit animal doivent être fermées, ce qui empêche l'eau de pénétrer dans les poumons. Aux naturalistes de préciser le fait.

tame: les bâtons sont toujours courbes précisément parcequ'ils sont taillés dans ces dents courbes[28]. Je pense que la matière employée jouait son rôle dans l'efficacité de l'ensemble. Quelque légende ou mythe concernant la déesse hippopotame devait servir à expliquer l'emploi de ces bâtons en forme de dents[29] mais il faut noter cependant que, dans le texte d'Ounas, nous avons affaire à un hippopotame et non à la déesse hippopotame.

Ce sont là de longues digressions à propos d'un simple mot mais la vie de chaque terme, en tout langage, entraîne un enchainement de problèmes qu'il n'est pas inutile de signaler.

PARIS

[28] Nos vierges en ivoire sont toujours inclinées sur la hanche, du côté droit ou du côté gauche, parce qu'elles doivent épouser les courbes de la défense de l'éléphant.

[29] L'hippopotame Touêris, debout sur ses pattes de derrière, figure à plusieurs reprises sur les trois bâtons magiques du musée de l'Oriental Institute reproduits dans Breasted, *Geschichte Aegyptens* (Vienne, 1936), fig. 320–21.

BABYLONIAN ASTRONOMY. III. THE EARLIEST ASTRONOMICAL COMPUTATIONS

B. L. VAN DER WAERDEN

I. SUMMARY

THE first astronomical phenomena which the Babylonians learned to compute were (1) the duration of day and night, (2) the rising and setting of the moon, and (3) the appearance and disappearance of Venus.

The Venus computations, contained in one copy of the sixty-third tablet of the great omen series Enûma Anu Enlil, have already been discussed by Kugler[1] and in the first paper of this series.[2] The underlying assumption is that Venus is visible during eight months and five days, and invisible during three months before she reappears as the Evening Star, or during seven days before she reappears as the Morning Star. That is all there is about it.

Much more interesting are the computations of daylight and night. In our texts we can distinguish two systems (the Roman numerals denote Babylonian months).

According to the *older system* (probably before 1000 B.C.), the spring equinox is XII 15, the longest day is III 15, and the proportion of the longest day to the shortest night is 2:1. The year is divided into twelve schematical months of thirty days each. The months are connected with the heliacal rising of certain fixed stars; there is no mention of the zodiac.

According to the *later system* (about 700 B.C.), the spring equinox is I 15 and the longest day IV 15. The proportion of the longest day to the shortest night is sometimes assumed as 2:1, sometimes in the same texts as 3:2. The latter, better value is only mentioned, not used in the computations. The year is again divided into twelve schematic months of thirty days each, but the months are now related to a division of the zodiac into four parts in such a way that the sun dwells three months in each of the parts.

In both systems the duration of the day increases during six months and decreases during six months, and the rate of increase or decrease is constant. Thus, the longest day being two-thirds and the shortest day one-third of a complete day+night, the duration of any night or day can easily be computed.

In the Seleucid era these simple rules were replaced by more accurate ones. The principle of a constant rate of increase or decrease persists, but the constant rate is changed every month, so that near the equinoxes the increase is faster than near the solstices. In addition to this, the duration of daylight is no longer related to a schematical division of the year, but to the sun's actual position in the zodiac, which is a great improvement.

Similar methods were devised by the Babylonians, and used by Greek authors too, for the computation of other astronomical variables, such as the moon's velocity and the moon's latitude.

In the oldest texts we already find, in connection with the duration of the night, a method for computing the moon's rising or setting. This method starts from the following assumptions:

1. The night before a new month begins, the moon sets at sunset and is invisible during the night.

2. For every day that passes until the fifteenth night, the retardation of the

[1] F. X. Kugler, *Sternkunde und Sterndienst in Babel*, II, 259–66 and 276.

[2] B. L. van der Waerden, "Babylonian Astronomy I," *Jaarboek, Ex Oriente Lux*, X (1948), 424.

moon's setting after sunset is just one-fifteenth of the night.

3. In the fifteenth night the moon rises at sunset and sets at sunrise.

4. For every day that passes after the fifteenth night, the retardation of the moon's rising is just one-fifteenth of the night.

5. Hence in the thirtieth night the moon is invisible and rises with the sun.

As we shall see, Vettius Valens and Pliny followed nearly the same rule for computing the moon's rising and setting. Further, these rules are closely related to a Greek method for determining the time during the night by observing rising zodiacal signs. More and more it becomes clear, how closely interrelated Babylonian and Greek astronomy and Hellenistic astrology are.

We shall now consider the texts more in detail.

II. THE OLDER SYSTEM

The older system is represented by the circular astrolabe, the fourteenth tablet of the great omen series, and two closely related texts K 90 and BM 45 821.

The date of these texts is uncertain. We know for certain only that the industrious priest Nabû-zuqup-kênu, who lived in Kalaḫ in 700 B.C., copied the great omen series and the circular astrolabe with the numbers indicating the duration of daylight. We may conjecture, according to Schott,[3] that the prototype of the astrolabe texts was circular, but we do not know whether it had the numbers. The Berlin astrolabe B, from Assur (1100 B.C.) does not contain the numbers. The great omen series may have been composed at any time between, say, 1500 and 800 B.C. Because our texts are related to the astrolabe B and to Hilprecht's Nippur text, written in the twelfth or eleventh century,[4] it seems probable that our "older system" has its origin before 1000 B.C.[5]

However this may be, we may assert with confidence that our "older system" is really older, because it is more primitive than the younger one. The ratio 3:2 of the longest day to the shortest night, given by the younger texts, is excellent and was retained by the Babylonian astronomers until Seleucid times, whereas 2:1 is a very rough and primitive approximation. ^{mul}APIN is a compilation: part of it goes back to observations made between 1400 and 900, whereas another part originated about 700, as we have seen in our previous paper mentioned in note 4.

III. THE CIRCULAR ASTROLABE

A picture of this text has been given *loc. cit.*,[6] page 9. The outer ring contains the following numbers:

Month	I	3;20	VII 2;40
	II	3;40	VIII 2;20
	III	4	IX 2
	IV	3;40	X 2;20
	V	3;20	XI 2;40
	VI	3	XII 3

The group 3;20 means $3\frac{1}{3}$. The numbers of the middle ring are one-half of these, those in the inner ring one-quarter. In the same paper, "Babylonian Astronomy. II," page 18, we have already given the reasons why the numbers in the outer ring must mean the duration of a day watch, i.e., as one-third of the day, expressed by means of the weight of water one has to pour into a water clock at the beginning of the watch. The Babylonians assumed the weight to be proportional to the duration of the watch, which is not quite true.[7] Similarly the numbers on the

[3] A. Schott, *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, LXXXVIII (1934), 302.

[4] For further references see my "Babylonian Astronomy. II," *Journal of Near Eastern Studies*, VIII (1949), 6.

[5] E. F. Weidner, "Die astrologische Serie Enûma Anu Enlil," *Archiv für Orientforschung*, XIV (1943), 172.

[6] See n. 4 above.

[7] See O. Neugebauer, *Isis*, XXXVII (1947), 40.

middle ring refer to half-watches, and those on the inner ring to quarter-watches or seasonal hours (one hour = one-twelfth of the day or night).

According to this text, the equinoxes are in the months VI and XII, the longest day is in III and the shortest day in IX. The ratio of the longest day to the shortest night is 2:1.

The same numbers, multiplied by four, are found in the following text:

IV. THE FOURTEENTH TABLET OF THE GREAT OMEN SERIES

The text K 6427, the first part of the fourteenth tablet of the series Enûma Anu Enlil, published by Craig (*Astronomical and Astrological Texts*, Pl. 17) begins as follows:[8]

Nisan 1.	11 UŠ 40 GAR	*tâmartu* of the Moon. Nisan 15 . . .
Ijar 1.	10 UŠ	*tâmartu* of the Moon. Ijar 15. 9 UŠ . . .
etc. until:		
Addar 1.	12 UŠ 40 GAR	*tâmartu* of the Moon. Addar 15 . . .

The text is very corrupt. According to Schaumberger,[9] the numbers should be corrected and completed as follows:

I 1	11;20 (not 11;40)	I 15	10;40
II 1	10	II 15	9;20
III 1	8;40	III 15	8
IV 1	8;40 (not 9;40)	IV 15	9;20
V 1	10	V 15	10;40
VI 1	11;20 (not 11;40)	VI 15	12
VII 1	12;40	VII 15	13;20
VIII 1	14	VIII 15	14;40
IX 1	15;20 (not 15;40)	IX 15	16
X 1	15;20 (not 16;40)	X 15	14;40
XI 1	14	XI 15	13;20
XII 1	12;40	XII 15	12

We know what the units UŠ and GAR mean: 1 UŠ = 60 GAR = 4 minutes is the fundamental unit of time in all Babylonian computations. Further we know that igi.du$_8$.a = *tâmartu* means "visibility," but the expression "visibility of the moon" does not tell us much. In such cases the exact meaning of the numbers must be concluded from the context.

The mean value of the numbers is 12 UŠ, which is just one-fifteenth of a mean night. This is the value for Addaru 15th. As the days grow longer and the nights become shorter, the numbers of the text diminish until they reach their minimum 8 UŠ. From now on the numbers increase until they reach their maximum 16 UŠ, etc.

We now see that there is a very simple relation between these *tâmartu*-numbers and the numbers on the circular astrolabe. Calling the latter x and the former y, it is easily seen that y *is four times* $(6 - x)$. E.g., for the middle of the third month we have $x = 4$, hence $6 - x = 2$, and $y = 8$, etc.

It is easy to see what this relation means. The subtraction from six means the passage from a day watch to a night watch, for the sum of three day watches and three night watches is equivalent to 18 mana of water, so the sum of one day watch and one night watch is 6 mana. So our rule means: *Multiply the* manas *of the night watch by four, and you get the tâmartu of the moon.*

Exactly the same rule is given by the later group of texts. Thus, the second tablet of ^{mul}APIN (VAT 9412, rev. I, line 13): "3 mana wake of night. Multiply by four and you get twelve as *tâmartu* of the moon."

A mean night watch of 3 mana lasts four of our hours, or 60 UŠ, so we have 1 mana = 20 UŠ.

Hence to obtain the duration of a night watch in UŠ, we have to multiply the number of manas by twenty. But

[8] A complete transcription of this and all related texts has been given in my recent article in the *Zeitschrift für Assyriologie*, XV, 291.

[9] J. Schaumberger, *Drittes Ergänzungsheft zu Kugler's Sternkunde*, p. 280.

in order to pass from one night wake or one-third of the night to one-fifteenth of the night, we have to divide by five. Now multiplying by twenty and dividing by five means multiplying by four. This is why all our texts use the factor four. *What they actually do amounts to computing one-fifteenth of the night in order to get the tâmartu of the moon.*

V. THE MEANING OF igi.du$_8$.a = *tâmartu*

The explanation of the term *tâmartu* can be drawn from VAT 8619 and other texts of the later system. But it is not even necessary to recur to these later texts: we can find the explanation on the same fourteenth tablet of the Great Omen Series.

The text 273 (80–7–19), containing the second part of this tablet, has been copied by Craig too (*Astron. and Astrol. Texts*, Pl. 16). It contains numbers accompanied by the word gub for the first sixteen days of the month, and one number called ge$_6$.šal for the sixteenth day. The rest is broken off, but the continuation of the series of numbers can be found on another text BM 45 821, where the same signs gub and ge$_6$.šal recur. Both texts have been published by Weidner,[10] together with the quite analogous text K 90.

The first seventeen lines of K 90 and the parallel lines of the fourteenth tablet run as follows:

Day	K 90	273 (80–7–19)
1	5 gub	3¾ gub
2	10 "	7½ "
3	20 "	15 "
4	40 "	30 "
5	80 "	60 "
6	96 "	72 "
7	112 "	84 "
8	128 "	96 "
9	144 "	108 "
10	160 "	120 "
11	176 "	132 "
12	192 "	144 "
13	208 "	156 "
14	224 "	168 "
15	240 "	180 "
16	224 " 1 ge$_6$.šal	168 " 12 ge$_6$.šal
17	208 " 32 "	

Kugler,[11] who first discussed the text K 90, was misled by the geometrical progression in the first five lines and interpreted gub as the light part of the moon's disk. But Weidner has rightly remarked that the numbers must mean times, for in the text BM 45 821 the numbers of text 273 are continued and reduced to *bêru* and UŠ, the typical units of time (1 *bêru* = 30 UŠ = 2 hours). We reproduce this text together with the last thirteen lines of K 90 as corrected by Kugler (shown on the next page).

In the third line we see that the number 60 ge$_6$.šal is translated as 2 *bêru*. In the next line, 72 is rendered as 2 *bêru* 12 UŠ, etc. The numbers 36, 48, 60, . . . , are the straightforward continuation of the series begun by 12 ge$_6$.šal of text 273. This proves that all the numbers of these texts must mean times, expressed in UŠ.

[10] E. F. Weidner, *Alter und Bedeutung der babylonischen Astronomie* (*Kampf um den Alten Orient*, 4 [1914]), p. 83.

[11] F. X. Kugler, *Sternkunde und Sterndienst in Babel, Erstes Ergänzungsheft*, p. 102.

Let us now consider the text K 90. The only astronomical time that increases in the first half of the month from 0 to 240, and decreases to 0 in the last half, is the time the moon shines during the night.

Apart from this exception, all texts of the older group follow a perfectly consistent pattern. They start with a very simple scheme for the lengthening and shortening of day and night and an equally simple rule for the setting and rising of the moon, and they develop the arithmetical consequences of these two rules in a perfectly logical way.

Day	K 90		BM 45 821																
18	192	g u b	48	g e$_6$. š a l	[144]	g u b	4⅔	*bêru*	4	uš	36	g e$_6$. š a l	1	*bêru* . . .					
19	176	"	64	"	[132]	"	4	"	12	"	48	"	1	*bêru* . . .					
20	160	"	80	"	[120]	"	4	"			60	"	2	"			*mûši*	NA	
21	144	"	96	"	[108]	"	3	"	18	"	72	"	2	"	12	uš	"	"	
22	128	"	112	"	[96]	"	3	"	6	"	84	"	2⅔	"	4	"	"	"	
23	112	"	128	"	[84]	"	2⅔	"	4	"	96	"	3	"	6	"	"	"	
24	96	"	144	"	[72]	"	2	"	12	"	108	"	3	"	18	"	"	"	
25	80	"	160	"	[60]	"	2	"	*mûši*	g u b	120	"	4	"					
26	40	"	176	"			[1]	"			150	"	5	"			"	"	
27	20	"	192	"			[⅓]	"	]		165	"	5⅓	"			"	"	
28	10	"	208	"			[¼]	"	]		172½	"	5⅔	"	2½	"	"	"	
29	5	"	224	"							[176]¾	"							
30	AN.NA	g u b																	

So this is what g u b means, and the complementary time g e$_6$. š a l is the time from sunset till the moon rises. The sum of the two times is 240 uš = 8 *bêru* in the text K 90 (except in the last five lines, where the text is corrupt), and 180 uš = 6 *bêru* in the other two texts. Now 6 *bêru* is exactly the duration of an equinoctial night, and 8 *bêru* is the duration of a mid-winter night, according to the old Babylonian theory. *Hence K 90 is meant for the winter solstice, and the two other texts for equinoctial nights.*

In all three texts the daily retardation of the moon's setting from the fifteenth to the twenty-fifth night is just one-fifteenth of the night. This rule gives rise to simple arithmetical progressions for the numbers g u b and g e$_6$. š a l . For the first and last five days, the arithmetical progression for g u b was replaced by a geometrical progression, for some unknown reason; but in the text K 90 the arithmetical progression for the numbers g e$_6$. š a l was retained. This resulted in a contradiction: the sum of the two numbers is no longer 240. This contradiction shows that there is something wrong with the last five lines.

VI. THE LATER SYSTEM

As remarked by Neugebauer, the Sargonid compilation I.NAM.GIŠ.ḪAR knows the very good ratio 3:2 of the longest day to the shortest night.[12] The passage runs: "1⅔ longest daylights are one day, [50 longest daylights are] one month, 600 longest daylights are one year" (K 2164+2195+3510 obv. 26, as explained by Kugler, *Erstes Ergänzungsheft*, p. 89).

However, in computing daylight and night for different months, and the daily retardation of the moon's rising or setting, the compilations of the Sargonid time follow the old scheme with the rough ratio 2:1. The only change is that the equinox is now laid in the fifteenth of Nisan. Thus, in ^{mul}APIN II (VAT 9412) we have twenty-four lines published by Neugebauer,[13] beginning as follows:

[12] O. Neugebauer, *Isis*, XXXVII (1947), 38.

[13] *Ibid.*, p. 41, No. 6. The same twenty-four lines are found in VAT 8619, published by E. F. Weidner, *Archiv für Orientforschung*, XII, 144, Taf. XII.

On Nisan 1st 3 m a n a 10 *siqlu* wake of the night;
12 UŠ 40 GAR setting of the moon.
On Nisan 15th 3 m a n a wake of the night;
12 UŠ setting of the moon.

At the end the text gives an indication how to compute the wake of the night and the visibility of the moon for any other day than the first or fifteenth:

$\frac{2}{3}$ *siqlu*, the daily difference of the night wake, multiply by 4 and you will see 2;40 [GAR], the [daily] difference of the visibility of the moon.

The series I.NAM.GIŠ.ḪAR contains twenty-four quite similar lines ending as follows:

On Addar 1st 3;30 [wake of night] 3;30 times 4:
14 until setting of moon.
On Addar 15th 3;20 [wake of night] 3;20 times 4:
13;20 until rise of moon.

One text of the later system requires a fuller discussion: it is the ivory prism of the British Museum 56–9–3, 1136.

VII. THE IVORY PRISM

This prism,[15] found by Loftus in the central part of the ruins of Nineveh, has long remained an enigma. Lenormant called it "rules of a game." The four faces of the prism contain mainly numbers. Faces A and B are still unexplained, but Fotheringham[16] has deciphered and reconstructed faces C and D. Only the lower halves of these faces have been preserved; their top lines explain in very short words what the numbers mean. I shall reproduce here the top lines of face C and all that is left of face D.

FACE C

Day Ayru Ululu Night Araḫsamma Addaru 6 $\frac{2}{3}$ [*bêru*] day	Night Ayru Ululu Day Araḫsamma Addaru 5 [*bêru*] 10 [UŠ] night ....

FACE D

Day Dûzu Night Tebêtu 8 [*bêru*] day 20 [UŠ] 1 [*bêru*] 10 2 2 $\frac{2}{3}$ 3 10 4	Night Dûzu Day Tebêtu 4 [*bêru*] night 10 [UŠ] 20 1 1 10 1 20 2 2 10

The New Babylonian text BE 13918, published by Weissbach,[14] follows the same system, but expresses night and daylight as fractions of the full day: "Nisan 1st 0;31,40 night, 0;28,20 its daylight; Nisan 15th 0;30 night, the same its daylight"; etc.

The units *bêru* and UŠ are not mentioned in the text, but they may be inferred as follows. First, it is clear from the regular formation of the arithmetical series of numbers that the larger unit is

[14] E. Weissbach, *Babylonische Miszellen*, p. 50, Taf. XV, No. 4.

[15] Published by F. Lenormant, *Choix de textes cunéiformes* (Paris, 1873), No. 86, and Sayce, *Zeitschrift für Assyriologie*, II, 336. See also S. Langdon, *Babylonian Menologies* (London, 1935), p. 55.

[16] J. F. Fotheringham, *The Observatory*, No. 703 (1932), p. 338.

thirty times the smaller one. Now this is the case for *bêru* and uš and for no other known units. Second, if the units are *bêru* and uš, the pretended duration of daylight and night is in perfect accordance with all other texts of the later system. For we may then reconstruct the scheme of the faces C and D of the ivory prism as follows, the Roman numerals denoting months:

Day I and VII 6 *bêru*
Day II and VI / Night VIII and XII } 6⅔ *bêru*
Day III and V / Night IX and XI } 7 *bêru* 10 uš
Day IV / Night X } 8 *bêru*
Night I and VII 6 *bêru*
Night II and VI / Day VIII and XII } 5 *bêru* 10 uš
Night III and V / Day IX and XI } 4⅔ *bêru*
Night IV / Day X } 4 *bêru*

As regards the numbers in lines 4–10 of face D, they obviously represent one-, two-, three-, four-, five-, six-, and seven-twelfths of the day or night. The same holds for face C.

VIII. POPULAR AND ASTRONOMICAL UNITS OF TIME

From the ivory prism we see that the Babylonians divided the day and the night into twelve equal parts each, just as the Greeks did. This confirms a statement of Herodotus (ii. 109): "From the Babylonians the Greek learned polos and gnomon and the twelve parts of the day."

We have seen that the seasonal hours occurred already on the circular astrolabe, and that they were obtained by halving and again halving the three "watches" of the day.

It is clear that these watches, half-watches, and quarter-watches or seasonal hours, were, in Babylonia, just as well as in Greece and Rome, *popular* units of time. Astronomers like Ptolemy used "*equinoctial hours*" of strictly equal length, and we modern people follow the astronomical usage. The Babylonian scientific units are *bêru* and uš. No other units of time occur in astronomical texts of the Persian and Seleucid time.

On the other hand, the older astrological texts use the popular division of day and night. The omen of an eclipse depends on the night watch in which it takes place.

Now it is easy to guess the purpose of the ivory prism. It might have served to convert popular units of time into *bêru* and uš, and conversely. If, e.g., the time of an eclipse was measured in *bêru* and uš by water clocks, this time had to be converted into watches and quarter-watches in order to be used for astrological predictions.

By a lucky accident we are able to confirm this guess by comparing with each other two genuine records of one and the same Babylonian eclipse, one expressed in seasonal hours and the other in scientific units. The scientific record is found in line 19 of the text Strm. Kambys. 400 and runs:[17]

Year 7 *Dûzu* 14 in the night 1⅔ *bêru* after sunset a lunar eclipse, visible from the beginning to the end, extending over the northern half of the disk.

The other record is found in Ptolemy (*Syntaxis* v. 14) and runs:

In the seventh year of Kambyses, in the night following the seventeenth Egyptian Phamenoth, one hour before midnight, a lunar eclipse was seen at Babylon, extending over half of the diameter from the North.

Ptolemy's direct source might have been Hipparchos. Now one might suppose that Hipparchos or some other Greek astronomer had converted the Babylonian 1⅔ *bêru* into Greek hours and that Ptolemy had only quoted this Greek

[17] F. X. Kugler, *Sternkunde und Sterndienst in Babel*, I, 71.

record. But this will not do. For if we convert the given time "1⅔ *bêru* after sunset" by means of correct or nearly correct astronomical tables into hours before midnight, we arrive at $10^h\ 25^m$, i.e., more than 1½ equinoctial hours, or 1¾ seasonal hours before midnight, whereas Ptolemy has "one hour before midnight."

The correct explanation has been given by Fotheringham.[16] The 1⅔ *bêru* were converted into seasonal hours, not by correct Greek methods, but by the very rough rule of the Babylonian ivory prism. According to this prism, face D, five-twelfths of the night in *Dûzu* are just 1⅔ *bêru*. So a Babylonian astrologer, starting from the observed 1⅔ *bêru*, would convert this time with the aid of his table and report to his lord that the eclipse took place five seasonal hours after sunset, or one hour before midnight. Eventually, by some way or other, this astrological report came into Ptolemy's hands, whereas the scientific record remained in Mesopotamia until it was brought to Europe and copied by Father Strassmaier.

IX. THE VISIBILITY OF THE MOON ACCORDING TO ROMAN SOURCES

The astrologer Vettius Valens (i. 15, ed. Kroll, p. 28) gives an interesting table for computing the setting of the moon on the first, second, . . . , fifteenth night of the month. The times are given in seasonal hours, and the daily retardation of the moon's setting is just ⅔ hours, i.e., one-fifteenth of the night, just as in our Babylonian tables.

Pliny gives (ii. 58) the following rule: the daily retardation of the moon's setting or rising is dodrans and semiuncia, i.e., $\frac{3}{4} + \frac{1}{24}$ (hours). Now if ⅔ is expressed as a multiple of the roman *as* ($= \frac{1}{12}$), we get 9⅞ *as*, to which Pliny's 9½ *as* is the nearest possible approximation. From this, Bidez and Cumont[18] rightly conclude that Valens' table and Pliny's rule are derived from the same source.

Another table for computing the rising and setting of the moon during the night is contained in the *Geoponica* and ascribed, by the author himself, to "Zarathustra," i.e., to an oriental source. As Bilfinger[19] has shown, this table was computed by means of Pliny's rule.

So Roman authors used Babylonian methods for computing astronomical phenomena. Another still more instructive instance of this is given by the Egyptian planetary texts of the period from Augustus to Hadrian.[20]

X. HOW TO TELL THE TIME DURING THE NIGHT FROM RISING ZODIACAL SIGNS

The conclusions of this section are not so firmly established as those of the others. Yet it seems desirable to present them, because they seem to indicate a close connection between Babylonian and classical Greek astronomy.

Xenophon[21] tells us that Socrates advised his pupils to learn astronomy only to such an extent as is necessary to tell the time from the stars during the night, which could be learned from hunters or seamen. What method did he allude to?

In the famous poem of Aratos (vss. 553–61) such a method is described. Every night six parts of the zodiacal circle rise and six parts set, for half of the zodiacal circle rises over the earth in the course of one night. So if you notice what parts of the zodiac rise during the night, you can tell how much of the night has passed and when the day will come. "For with one of the signs he himself rises, Helios."

For better observation, Aratos then

[18] J. Bidez and F. Cumont, *Les mages hellénisés*, II, 176.

[19] Bilfinger, *Neue Jahrbücher Philologie und Pädagogie*, LIV (1884), 488.

[20] B. L. van der Waerden, "Egyptian 'Eternal Tables,'" Kon. Ned. Akad. van Wetensch., *Proc. of the Section of Sciences*, Amsterdam, L (1947), 536 and 782.

[21] Xenophon *Memorab. Socrat.* iv. 7.

gives a list of stars that rise or set with the rising zodiacal signs, the so-called "paranatellonta" of the signs. Later on, paranatellonta gained a great importance in astrological literature, but originally they were simply a means of determining what zodiacal signs are above or below the horizon.

Aratos' paranatellonta go back to Eudoxos, who must have made use of a wooden stellar sphere. On the other hand, the astrological paranatellonta were based, not only upon the Greek constellations, but also upon the oriental "Sphaira barbarica."[22]

Aratos' method of time determination obviously presupposes equal parts of the zodiac to rise in equal times. For without such an assumption, it would be impossible to draw any conclusion concerning time from the rising parts of the zodiac.

Further, the method presupposes a division of the zodiac into twelve parts. From Aratos' statement that always six signs are above the horizon and six below, we may conclude that the twelve signs were of strictly equal length, just like the Babylonian zodiacal signs. This is confirmed by an exact examination of the list of paranatellonta by means of a precession globus by my friend R. Böker (not yet published). The same examination shows that the equinoxes and solstices were supposed to lie in the middle of the signs Aries, etc. This is also Eudoxos' location, and it agrees with the text ^{mul}APIN. Finally, it turns out that the geographical latitude, for which the paranatellonta of Eudoxos and Aratos are correct, is just that of Babylon: between 32° and 33°.

These are strong indications, all pointing toward Babylonia. Further, it is quite clear that the method of determining the time by means of the six signs that rise during the night is closely related to a division of the night into six equal parts. Now the division into three, six, and twelve parts of the night is Babylonian too, as we have already seen. From all this one gets the very strong impression that this whole method of determining time during the night is of Babylonian origin.

Another argument is furnished by the old method for computing the time of the moon's rising and setting, discussed in the previous sections. This method can be justified by exact logical reasoning, if three assumptions are made: (1) the moon's motion in latitude is negligible, (2) the moon moves in the zodiac at a constant speed in such a way that it needs exactly thirty days to overtake the sun, and (3) equal parts of the zodiac rise and set in equal times during the night.

The reasoning based upon these assumptions is as follows. The new moon coincides with the sun. After one day, by assumption 2, the moon advances just one-thirtieth of the zodiac as compared with the sun. Now how long does it take for this arc of one-thirtieth of the zodiac to set? At the beginning of the night the sun sets; at the end of the night, at sunrise, the point of the zodiac just opposite the sun sets. So half of the zodiac sets during the night. Hence, by assumption 3, one-thirtieth of the zodiac sets in just one-fifteenth of the night after sunset. In the next night the retardation will again be one-fifteenth of the night, by the same reasoning.

I do not know whether the Babylonians were conscious of all the steps of this reasoning. I only wanted to show that the method of the fourteenth tablet of the Great Omen Series and the method of Aratos belong to the same order of ideas, that there is a logical connection between

[22] See F. Boll, *Sphaera*, and F. Gundel, *Neue Texte des Hermes Trismegistos*, Abh. Bayer. Akad. Wiss. (phil.-hist.), neue Folge, Heft 12 (1936).

them, and that both may be deduced from the same fundamental hypothesis, viz., that equal parts of the zodiac rise and set in equal times during the night.

We might add that the Babylonians were interested in simultaneously rising and setting stars just as much as the Greeks. For in ^{mul}APIN we find a list of simultaneously rising and setting stars, and another list of stars rising at the same time when other stars culminate.[23] Another list[24] gives differences between times of culmination, expressed in weights of water (flowing from water clocks). All this proves that the problem of determining time from the stars had the constant attention of Babylonian astronomers.

XI. LATER COMPUTATIONS OF THE RISING AND SETTING OF THE MOON

In the Persian era there must have been much more elaborate methods for computing the rising and setting of the moon. For the obverse of the text of Strm. Kambys. 400 (cf. Sec. VIII) contains, for all the twelve months of the year 7 of Cambyses, time indications of the following kind for the first, thirteenth, fourteenth, fifteenth, and twenty-seventh day of the month:[25]

Simannu	30	18	30	
MI	14	9	30	ME
	14	4		šÚ
	15	5		MI
	15	8	30	NA
	27	24		
Dûzu	1	27		
	13	11		šÚ
MI	14	4		ME
	14	4		NA
MI	15	8	30	MI
	27	15		

The modern transcription of the cuneiform sign MI is ge$_6$. In this section we retain, for the sake of convenience, Kugler's transcription. The first MI means "at night." The numbers in the next column mean dates. "Simannu 30" means: the preceding month had twenty-nine days. "Dûzu 1" means: the preceding month had thirty days.

In the next column, a group like 9 30 means 9½ uš, or 9° 30′, if we denote 1 uš by 1° and the sexagesimal parts (as usual) by 1′, 1″, etc.

In the last column, ME means: rising of the moon before sunset; šÚ means: setting of the moon before sunrise; MI = ge$_6$ means: rising of the moon after sunset; NA means: setting of the moon after sunrise.

The first line of the *Dûzu* section means: On *Dûzu* 1 (Simannu had thirty days) the moon sets 27° (=108 minutes) after sunset. Similarly, the last line means: On *Dûzu* 27 the moon rises 15° (=60 minutes) before sunrise.

According to Kugler, the numbers in the text were not observed but computed, for the series is not interrupted even during the rainy season (where observation is sometimes impossible). Moreover, observational texts usually contain weather indications, which are lacking here.

Some indications about the methods by which the computations were made might be drawn from an Uruk text AO 6455, usually called TU 11 (Thureau-Dangin, *Tablettes d'Uruk*, No. 11). In this text, several rules are given, some based upon the "saros" period of eighteen years and its multiples, others upon the old rule that the daily retardation of the moon is one-fifteenth of the day or night. Often, however, the text must be amended to become intelligible. Most probably, the Uruk scribe who compiled or copied it did not understand the underlying astronomical ideas. For instance, being in doubt whether he should divide the day or the

[23] F. X. Kugler, *Sternkunde, Erstes* and *Zweites Ergänzungsheft*, pp. 1–49, 141–81, and 207–24.

[24] AO 6478; see Kugler, *ibid.*, p. 186.

[25] F. X. Kugler, *Sternkunde und Sterndienst in Babel*, I, 64.

night by fifteen, he states[26] that the longer one of the two should be taken, which is obviously nonsense.

Anyhow, the text shows that the Babylonians were able to compute the expected time of rising or setting of the moon from observed values either a few days earlier, or eighteen years earlier, or thirty-six or fifty-four years earlier.

In planetary calendars of the Seleucid period, we often find a quite similar arrangement of numbers accompanied by the words ME, MI, ŠÚ, and NA, as in Strm. Kambys. 400. According to Kugler,[27] "the numbers found on the planetary calendars were always derived from the corresponding values of observational tablets for a date eighteen years before." The latter values were found "either by direct observation, or, if bad weather made the observation impossible, they were computed in their turn from values eighteen years earlier." The observational tablets always contained weather indications and short notes whether a value was observed or not.

Kugler found that very often only one of the two values ME and MI, or ŠÚ and NA, was observed. The other could be derived from it, if the sum ME+MI, or ŠÚ+NA, the daily retardation of the moon's rising or setting, were known. As a matter of fact, all observational tablets of this kind ("planetarische Hilfstafeln," as Kugler calls them, made for the purpose of computing the expected phenomena eighteen years later) contain separate columns for ŠÚ+NA and ME+MI, at least for the rainy season (Tishritu to Addaru). Two such columns were reproduced by Kugler (*Sternkunde*, II, 542). Unfortunately, we do not know how these columns were computed.

[26] F. Thureau-Dangin, *Rev. d'Assyriol.*, XXXVII, 6, and O. Neugebauer, *Isis*, XXXVII, 42.

[27] F. X. Kugler, *Sternkunde*, II, 538.

XII. LATER COMPUTATIONS OF DAYLIGHT AND NIGHT

In the lunar tablets of the Seleucid period deciphered by Kugler,[28] two different systems of computing the course of sun and moon are used, called by Kugler "Systems I and II." System II is probably somewhat older, but we really do not know the date of either. The texts themselves seem to ascribe System I to Kidinnu, II to Nabu-rimanni, known from Greek texts as Kidenas and Naburianos.

All lunar tables contain one column (col. C in System I, D in System II) representing the duration of daylight, expressed in UŠ. In both systems, the daylight is derived from the sun's position in the zodiac, computed in the immediately preceding column (B or C). This in itself is already an enormous improvement over the older texts, which made the duration of daylight depend on whether the month name happened to be, say, *Simannu* or *Dûzu*. Another improvement is that the longest daylight is now no longer fixed as two-thirds, but as three-fifths of the full day, which is excellent for Mesopotamia.

In System I, the spring equinox is laid on Aries 8°, in System II on Aries 10°. Note that the Babylonians used a fixed division of the zodiac, rigidly connected with the fixed stars, so that, e.g., Spica always marks the end of the sign Virgo. The location 10° of the equinox may be called more conservative, since the venerable old text ^{mul}APIN had 15°. But 8° was nearer to reality for the time of our texts, for the oldest known lunar tables date from about 220 B.C., and at that time the equinox lay between 5° and 7° on the Babylonian zodiac.

In both systems the 90° of the zodiac between an equinox and a solstice are divided into three parts of 30° each. For each of the three parts, a different rate of

[28] F. X. Kugler, *Babylonische Mondrechnung* (Freiburg, 1900).

increase or decrease of the daylight is assumed: a larger rate near the equinox and a smaller rate near the solstice, in close approximation to reality. The ratios of the rates of increase are as 5:3:1 in System II and 3:2:1 in System I.

Since the equinoctial day is 180° and the longest day 216° in both systems, the difference (36°) must be divided into the parts 20+12+4 for System II, and 18+12+6 for System I. So, if, in System II, the sun's position is 10° of Aries or Taurus or Gemini or Cancer, the duration of daylight will be 180° or 200° or 212° or 216°, and the increase for every degree of the sun's motion will be first 40′, next 24′, and finally 8′. Similarly, for System I, the increase will be first 36′, next 24′, and finally 12′ for every degree of the sun's motion.

The main purpose of the computation of daylight in both systems is to reduce the computed time of an eclipse to time after sunset, as used in civil time reckoning. The astronomical computation gives the time after midnight, and to reduce it to sunset half of the night has to be added.

XIII. OTHER APPLICATIONS OF ARITHMETICAL SERIES

We have seen that the method of computing astronomical quantities by means of increasing and decreasing arithmetical series originated very early. The first quantities to which the method was applied were the durations of daylight and night. In later times the computation of daylight and night was considerably refined and reached a very good approximation to reality.

In addition to this, the same method was applied to several other astronomical quantities, viz., the monthly motion of the sun in System I, the moon's latitude in Systems I and II, the moon's velocity in both systems, and the duration of the synodical month and some correction terms in System I.

In the case of the moon's latitude in System II, the increase is made larger near the nodes and smaller near the maxima, just as for daylight.

In the Jupiter tables of the third kind,[29] and in the Saturn tables,[30] the synodic arc of the planet is again represented by an increasing and decreasing arithmetical series. So this is a fundamental idea in Babylonian astronomy.

The Greeks knew about these Babylonian methods. For Geminos, who probably wrote in the first century B.C., gives an account of how the Chaldaeans computed the moon's velocity.[31]

According to Geminos, the ancient astronomers had observed that 669 months contain 717 anomalistic periods of the moon, or 19 756 days, and that the moon's course during this time is 723 full circles plus 32°, or 260 312°. Dividing this by 19 756, the Chaldaeans found 13° 10′ 35″ for the moon's mean daily motion. Dividing 19 756 by 717, they found 27;33,20 days for the moon's anomalistic period.[32] One quarter of this, 6;53,20, is the time in which the moon's daily motion increases from its minimum to its mean or from its mean to its maximum value. Further, it was known from observation that the maximum lies between 15° and 16°, and the minimum between 11° and 12°.

Next Geminos proceeds to determine the daily increase of the moon's velocity. "Since the moon gets from its slowest to its mean motion and likewise from the mean to the fastest motion in 6;53,20 days, and since the increase remains the same all the time, we have to find a number, such that, if we multiply it by

[29] Kugler, *Sternkunde*, I, 150.

[30] B. L. van der Waerden, *Eudemus*, I (1941), 39.

[31] Geminos, *Isagoge*, ed. Manitius (Leipzig, 1898), chap. 18.

[32] This is an error of Geminos, as Neugebauer has pointed out. The correct quotient is 27;33,13, . . . This error does not influence the final result of the computation.

the quarter-period, and add the result to the mean motion, we get a number between 15 and 16, but if we subtract it, between 11 and 12. . . . As a number having this property we find 18′. For if we multiply it with 6; 53, 20, we get 2° 4′. Adding this to the mean motion 13° 10′ 15″, we get 15° 14′ 35″, and subtracting it, we get 11° 6′ 35″.

"So we have found for the slowest daily motion 11° 6′ 35″, for the mean 13° 10′ 35″, for the fastest daily motion 15° 14′ 35″, and for the daily increase 18′."

Schnabel[33] has found that exactly the same values for the slowest, mean, and fastest motion and for the daily increase were used in a cuneiform text AO 6492 (= *Tablettes d'Uruk*, 25). So Geminos proves to be well informed about Babylonian methods.

The same is true for Hipparchos (150 B.C.), for his very accurate values for the mean synodic month and for the ratios of the anomalistic and draconic month to it are identical with those used in Babylonian lunar tables, as Kugler[34] has shown.

XIV. ARITHMETICAL SERIES IN GREEK ASTRONOMY

In Greek theoretical astronomy, circular motions were combined in space by geometrical construction. In this order of ideas, it is very difficult to compute planetary positions numerically. One has to use trigonometry, and it was only in the latest phase of Greek astronomy that this tool was available. Small wonder, hence, that the Greeks, if they wanted a quick and easy numerical approximation, often used Babylonian methods. A good example is the *Anaphorikos* of Hypsikles.[35]

Hypsikles' problem is to compute the times the zodiacal signs need to rise above the horizon. He assumes the spring equinox to coincide with the beginning of the sign Aries, and the rising times of the signs to form an increasing arithmetical series from Aries to Virgo, and a decreasing arithmetical series with the same difference from Libra to Pisces. Further he assumes the ratio of the longest to the shortest day to be 7:5 for Alexandria. From these assumptions he derives the rising times of the single signs as follows.

First, the sum of all rising times, the rising time of the whole zodiac, is one full day or 360°. This gives 30° for the mean rising time of one zodiacal sign. Note that Hypsikles uses Babylonian units of time, dividing the full day into 360 degrees (UŠ) and every degree into 60 minutes (GAR).

Next he makes use of the fact that just six signs rise during a light day. Since the longest light day is seven-twelfths of a full day, or 210°, the sum of the rising times of Cancer, Leo, Virgo, Libra, Scorpio, and Sagittarius must be 210°; hence the sum of the first three (Cancer, Leo, Virgo) as well as the sum of the other three must be 105°. From this, Hypsikles infers by means of some simple theorems on arithmetical series that the rising time of Leo is one-third of 105°, or 35°, and the same for Scorpio. In the same way, the rising times for Taurus and Aquarius are found to be 25°, and the whole set of rising times is:

Aries	21° 40′	Libra	38° 20′
Taurus	25°	Scorpio	35°
Gemini	28° 20′	Sagittarius	31° 40′
Cancer	31° 40′	Capricornus	28° 20′
Leo	35°	Aquarius	25°
Virgo	38° 20′	Pisces	21° 40′

Neugebauer[36] has shown that this list is only one of a set of similar lists for different climata, given by several astrological

[33] P. Schnabel, *Zeitsch. Assyr.*, XXXVII (1927), 35.

[34] F. X. Kugler, *Babylonische Mondrechnung*.

[35] Hypsiclis *Anaphoricus*, ed. Mentelius (Paris, 1657); K. Manitius, *Des Hypsicles Schrift Anaphoricus*, Programm Gymn. heil. Kreuz (Dresden, 1888).

[36] O. Neugebauer, *Trans. Amer. Philos. Soc.*, XXXII, No. II (1942), 251.

and popular astronomical authors. E.g., Vettius Valens and Manilius give the following rising times, corresponding to the Babylonian ratio 3:2 of the longest to the shortest day:

Aries	20°
Taurus	24°
Gemini	28°
Cancer	32°
Leo	36°
Virgo	40°, etc.

Next Vettius defines the "seven climata," starting from Alexandria and increasing the duration of daylight by 4° each time. For each of these climata he gives the rising times of the zodiacal signs. They turn out to be computed in exactly the same way as in Hypsikles' treatise.

Another list of rising times is found in Firmicus Maternus. Neugebauer has shown that the numbers were computed according to the same "System A" used by Hypsikles, Manilius, and Vettius Valens, but rounded off to whole degrees. The climata of Firmicus are:

Babylon,	daylight	216°
Rhodes,	"	218°
Athens,	"	220°
Hellespont,	"	224°
Rome,	"	226°
Ancona,	"	232°

Besides System A there is another "System B," as Neugebauer calls it. Here the difference between the rising times of the signs Gemini and Cancer is twice as large as the other differences. Thus, for the second clima of Michigan Papyrus III, 149 (clima of Syria), the rising times are:

Aries	21°	Libra	39°
Taurus	24°	Scorpio	36°
Gemini	27°	Sagittarius	33°
Cancer	33°	Capricornus	27°
Leo	36°	Aquarius	24°
Virgo	39°	Pisces	21°

The seven climata of the Michigan Papyrus are characterized by the following durations of daylight: 212, 216, 220, 224, 228, 232, 236. They form, just like those of Vettius Valens, an arithmetical series with a difference of 4°.

Cleomedes, Martianus Capella, and Gerbert follow System B for the Hellespontic clima, characterized by the ratio 5:3 (longest daylight 225°).

Most interesting is Neugebauer's discovery that the Systems A and B are closely connected to the Systems II and I, by which the Babylonians used to compute the varying duration of daylight.

The principle is as follows. The day begins with sunrise, and at the end of the day the point opposite the sun rises. So half of the ecliptic rises during the day. (Note that this was also Aratos' starting point; see our Sec. X!) *Hence, if the sun is at the beginning of a zodiacal sign, the duration of daylight is the sum of the rising times of the next six signs.*

Now if we start from a list of rising times for Babylon, as given by Vettius Valens (System A) or by the Michigan Papyrus for the clima of Syria (System B), and if we compute from this list the duration of daylight for different positions of the sun by adding six successive terms of the list, we get the following sums:

Sun's Position	System A	System B
0° Aries	180°	180°
0° Taurus	200°	198°
0° Gemini	212°	210°
0° Cancer	216°	216°
etc.	etc.	etc.

Now these figures are identical with those of the Babylonian lunar tables, provided we add 10° to the sun's position for System II (=System A), and 8° for System I (=System B). The relation of System B to System I is further confirmed by a statement in line XI 28 of Pap. Mich. III, 149; "the vernal point ought to be placed at the eighth degree of Cancer."

Thanks to Neugebauer's investigation, we now know how the Babylonians found the computation rules for daylight and night used in Systems II and I. No doubt they derived them from the rising times of the zodiacal signs, computed by Systems A and B, respectively.

It is not necessary to suppose that the Babylonians made their computations for any other clima than Babylon. As the Greeks learned to handle these Babylonian methods, they had no difficulty to extend them to other climata: they had only to substitute different values for the duration of daylight into the Babylonian computation rules.

In Section X, I put forward the hypothesis that the Greek method of determining time by rising zodiacal signs was of Babylonian origin. This hypothesis now gets a further confirmation by the fact that the Babylonians knew the relation between the duration of day and night and the rising times of the zodiacal signs.

We now discuss another point of contact between early Babylonian and early Greek astronomy, also connected with time measuring.

XV. THE SHADOW LENGTH

The Greek called "gnomon" a perpendicular bar on a horizontal basis (*skiotheron*), used for determining the time during the day by measuring the shadow length. Anaximandros erected at Sparta a gnomon, which indicated the equinoxes and solstices too (Diogenes Laertius ii. 1).

We have already quoted Herodotus' saying that the Greeks learned "polos and gnomon" from the Babylonians. This too is confirmed by our cuneiform texts, for the second tablet of the series ^{mul}APIN contains a table giving the time at which the shadow of a bar of one cubit reaches the length of one, two, three, . . . cubits, for different seasons.[37]

The assumptions, on which this table is based, are:

1. The time after sunrise, at which the shadow is reduced to one cubit, is 2 *bêru* (=4 hours) at the summer solstice, 3 *bêru* (=6 hours) at the winter solstice, and $2\frac{1}{2}$ *bêru* at the equinoxes.

2. The ratio of the gnomon length to the shadow length is proportional to the time after sunrise. So when the ratio is as 1:2 or 1:3, the time is just one-half or one-third of the time at which the ratio is 1:1.

The resulting approximation is not so bad in summer, but very bad in winter, when the ratio of the bar to the shadow reaches its highest noon value long before the 3 *bêru* of time have elapsed, and never reaches the value 1:1.

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[37] E. F. Weidner, *AJSL*, XL (1924), 198.

INSCRIPTIONS FROM THE PALACE OF AMENHOTEP III

WILLIAM C. HAYES

A GRATIFYING result of the excavations conducted in southwestern Thebes during the years 1910–20 by the Egyptian Expedition of the Metropolitan Museum of Art[1] was the recovery from the ruins of the palace-city of Amenhotep III[2] of a considerable amount of inscribed material, much of it of a historical or semi-historical nature. Included among the finds now in New York are some fourteen hundred hieratic jar-labels, an interesting series of stamped jar-sealings and stamped mud bricks, many ring bezels and other small objects bearing royal and private names, and a few inscribed architectural elements—all dated or datable to the last three decades of the reign of Amenhotep III. While it is not feasible, nor perhaps even desirable, to publish this material *in extenso*, we may utilize the *Journal*'s hospitable pages to record the principal types of inscriptions preserved to us from the palace ruins and to examine briefly the data which they contain on the life and history of the late Eighteenth Dynasty.

Figure 1, a much reduced and simplified version of Walter Hauser's master-plan of the palace area, made at the conclusion of the Museum's excavations in 1920, shows the distribution and outlines of the principal buildings and the locations of the other sites in which the inscribed pieces were found. The oldest and most important building, the palace of the king,[3] occupies the southeast quarter of the great complex and is adjoined on the east by its kitchens, offices, and storerooms, and by a smaller royal dwelling (the South Palace), perhaps at one time the residence of Queen Tiy.[4] The rambling Middle Palace, with its big porticoed courtyard, was probably built for the pharaoh's eldest son, Akhenaten, and occupied by him previous to and during the first five years of his coregency with his father.[5] Adjoining this palace, which is listed in the Expedition's field notes as "Ho.2.W," are the great houses Ho.1.W and Ho.3.W, prepared presumably for two other members of Amenhotep III's extensive family. The three big West Villas (A, B, and C), grouped together in a separate enclosure of their own, are thought to have housed the three senior officials of the court; while the rows of small, five-room houses farther to the west were clearly provided for minor officials or palace attendants. Similar rows of small houses, or Servants' Quarters, run parallel to the great North Palace, which appears to have been the residence of an extremely

[1] *Bull. MMA*, 1912, pp. 184–89; 1915, pp. 253–56; March, 1918, *Supplement*, pp. 8–14; December, 1920, Part II, p. 12.

[2] Long known to the natives of modern Thebes as el Malḳata ("the place where things are picked up"), the whole of the palace complex appears to have been called in antiquity *Pr-ḥ'y*, the House of Rejoicing.

[3] This structure, often referred to by modern writers simply as "the Palace," was partially excavated by Daressy in 1888–89 (*Ann. Serv.*, IV, 165–70; XXVI, 12), re-excavated by Tytus in January, 1902 (*A Preliminary Report on . . . the Palace of Amenhetep III* [New York, 1903]), and cleared by Winlock during the winter of 1910–11 (*Bull. MMA*, 1912, pp. 184–89).

[4] Of the earlier palace buildings this is the one most closely adjoining the Birḳet Habu, the great T-shaped lake or harbor which we are told was constructed expressly for the queen (Drioton, *Ann. Serv.*, XLV, 89–91; Engelbach and Macaldin, *Bull. Inst. d'Égypte*, XX, 51–81; etc.).

[5] The date "Regnal Year 1" (almost certainly of Akhenaten) occurs only in inscriptions from the Middle Palace (Fig. 4, No. 6).

important royal lady, quite possibly Queen Sitamūn.[6] The western end of this building is given over to magazines and workshops, and farther to the west are the remains of a workmen's village. North of the latter and probably at one time the northernmost building of the palace group is the royal Audience Pavilion, its floor elevated above the surrounding terrain, its northern façade provided with a balcony-like projection jutting out into a deep, colonnaded courtyard.[7] Wilkinson's Topographical Survey of Thebes published in 1830 and the general map of Thebes drawn up by Lepsius in 1842–45[8] show portions of the outlines of both this courtyard and a much larger enclosure a hundred meters farther to the north. The last-named comprises the forecourt, terrace, halls, sanctuaries, and magazines of a building identified by scores of stamped bricks and other inscribed objects found in it as the "Temple (*ḥwt*) of Amūn in the House of Rejoicing."[9] A Festival Hall, prepared for the celebration of Amenhotep III's second *Sed*-festival, rightly believed by Lansing[10] to have formed part of this group of structures, is probably one of the big colonnaded buildings which extend along the northern side of the temple forecourt. Vast rubbish mounds in the open areas west of the palace buildings and along the embankments of the Birḳet Habu yielded quantities of inscribed jar fragments, as did also the South Village, a group of small factories and workmen's houses 250 meters south of the main palace enclosure.[11] The double line labeled "Causeway" in Figure 1 is, in fact, a broad roadway embankment leading southward, apparently from the mortuary temple of Amenhotep III at Kom el Ḥetān, behind Medinet Habu and past the palace to a small sun-temple near Deir esh Shelwīt.[12] It was probably joined by a driveway from the West Gate of the palace enclosure and perhaps by another from the rear of the Amūn temple.

Although the inscribed material from the palace covers a period of time extending from the eighth to the thirty-eighth regnal years of Amenhotep III, the vast majority of the dated inscriptions (chiefly jar-labels) belong to the last ten years of the reign, with the heaviest concentrations of inscriptions falling, naturally enough, in Years 30, 34, and 37, the dates of the king's three *Sed*-festivals (see Fig. 16).[13] As it now appears that Akh-

[6] Evelyn White, its excavator, has pointed out that this palace is without the usual harem accommodations and must therefore have been built for and occupied by either a woman or a young boy (*Bull. MMA*, 1915, p. 256).

[7] Cf. Davies, *ZÄS*, LX, 50–56; *The Tomb of the Vizier Ramose*, p. 32, Pl. XXXIII; Hölscher, *ZÄS*, LXVII, 43–51.

[8] *Denkmaeler*, I, Pl. 73.

[9] See Lansing, *Bull. MMA*, March, 1918, *Supplement*, pp. 8, 9. The inscriptions referred to will be reproduced in a subsequent article. Hölscher was apparently unaware of their existence and of the nature and equipment of the building when he suggested (*ZÄS*, LXVII, 47) that it was nothing more than a group of magazines surrounding a suite of administrative offices.

[10] *Op. cit.*, p. 10. The existence of such a hall in the near vicinity was indicated by the presence in these ruins of fragments of a sandstone door-frame with inscriptions referring to the king's *Sed*-festival and by the concentration in the temple forecourt of hundreds of jars for meat and other commodities dated to Regnal Year 34 and designated as being "for the repetition of the *Heb-Sed*" (see Figs. 5, 10–12).

[11] The South Village was excavated in 1902 by Tytus (*op. cit.*, pp. 8, 25) and cleared and planned by Winlock in 1911 (*Bull. MMA*, 1912, p. 185). The fragments of inscribed jars mentioned by Daressy (*Ann. Serv.*, IV, 168–69) appear to have been found in the same general area.

[12] Tytus, *op. cit.*, p. 8. The ruins of the little temple at the southern end of the roadway appear to be unpublished but include a small courtyard surrounding the base of a solar obelisk. They are some distance from the well-known temple of Isis at Deir esh Shelwīt (Porter–Moss, *Top. Bibl.*, II, 197).

[13] Borchardt's contention (*ZÄS*, LXXII, 55) that the third *Heb-Sed* was celebrated not in Year 36, but in Year 37, is supported by the palace jar-labels (see Nos. 59, 142, 164, and the table of Fig. 16).

enaten was elevated to the throne as coregent in or about Year 28 of Amenhotep III[14] and transferred his residence to Tell el Amarna in or about Year 33, this means that the bulk of the dated inscriptions from the palace at Thebes are contemporary with those found at Amarna. We can, indeed, establish a close correspondence in date, year by year, between the two groups of inscriptions, based on the equations: Year 28 of A. III = Year 1 of A. IV, Year 33 of A. III = Year 6 of A. IV, Year 38 of A. III = Year 11 of A. IV, etc.[15] There is nothing either surprising or significant in the fact that very few of our dated inscriptions are earlier than Year 30 of Amenhotep III and none earlier than Year 8. On the contrary, considering the kind of inscriptions in question (temporary ink labels on pottery jars containing perishable commodities), it is remarkable that any have survived save those written during the last few years of the palace occupation. That this occupation continued for some time after the death of Amenhotep III in Year 38 or early in Year 39 is indicated by the Atenist erasures of the name of Amūn from most of the hieroglyphic inscriptions throughout the palace—a step which probably would not have been taken during the lifetime of the old king—and by the presence in the palace ruins of objects inscribed with the cartouches of Akhenaten, Smenkhkarēᶜ, Tutᶜankhamūn, ᶜAnkhesenpaaten, and Horemheb.[16]

I. THE JAR-LABELS

The hundreds of hieratic labels written in black ink on the shoulders of the pottery jars in which supplies of wine, ale, meat, fat, honey, oil, and other commodities were brought to the palace of Amenhotep III have received little more than passing comment from the excavators and students of the site.[17] Inscriptions of this class, however, are well known from tombs, temples, and other palace and town sites of the Eighteenth and Nineteenth dynasties and have been published in varying degrees of detail and from various points of view by Bruyère,[18] Carter,[19] Černý,[20] Dawson,[21] Engelbach,[22] Fairman,[23] Gardiner,[24] Griffith,[25] Gunn,[26] Hamza,[27] Hayes,[28] Maspero,[29] Nagel,[30]

[14] He is assigned a coregency of eleven years by Pendlebury (*JEA*, XXII, 198; see also *Tell el-Amarna*, p. 12), of more than nine years and probably eleven or twelve years by Engelbach (*Ann. Serv.*, XL, 134–35, 137), and of "scarcely less than a dozen years" by Steindorff and Seele (*When Egypt Ruled the East*, pp. 201, 275).

[15] Not an exact correspondence unless we assume that Akhenaten was made coregent on the anniversary of his father's accession. According to Borchardt (*Mittel zur zeitlichen Festlegung . . .*, pp. 83, 87, 121), there was a difference of three months and six days between the civil calendar dates of the accession of Amenhotep III (2, iii) and that of Akhenaten (8, vi ?).

[16] On the probable absence of any widespread persecution of Amūn during Amenhotep III's lifetime see Engelbach, *Ann. Serv.*, XL, 144.

[17] See the references cited in nn. 1 and 3, above; and Hayes, *Chron. d'Ég.*, 1949, p. 96, Fig. 9.

[18] *Fouilles Inst. fr. Caire*, VI, 11, 12.

[19] *The Tomb of Tut.ankh.Amen*, III, 104, 147–49, Pl. L. Photographs of the Tutᶜankhamūn wine-jars and labels taken by Harry Burton are on file in the Metropolitan Museum (Negatives TAA 831, 1023–32, 1095, 1180, 1185–88, 1190–95, 1199, 1200, 1274).

[20] In Nagel, *loc. cit.* (n. 30). Professor Černý has also made transcriptions of the jar-labels from the tomb of Tutᶜankhamūn (see Engelbach, *op. cit.*, pp. 163–64).

[21] *JEA*, X, 133.

[22] *Ann. Serv.*, XL, 163–64.

[23] In Frankfort and Pendlebury, *The City of Akhenaten*, II, 103–8, Pl. LVIII.

[24] *JEA*, V, 195, 198, 244, 257, 259–60; X, 93; XIX, 128; *Onomastica*, II, 173* f., etc.; *Wilbour Papyrus*, II, 110; and in Steindorff, *loc. cit.* (n. 38).

[25] In Petrie, *Tell el Amarna*, pp. 32–34, Pls. XXII–XXV.

[26] In Peet and Woolley, *The City of Akhenaten*, I, 164–68, Pls. LXIII, LXIV; and in Steindorff, *loc. cit.* (n. 38).

[27] *Ann. Serv.*, XXX, 43–45.

[28] *Bull. MMA*, January, 1937, Sec. II, pp. 30, 37–39; *Ostraka and Name Stones from the Tomb of Senmūt*, Nos. 121–23, 125–29.

[29] In Davis and Maspero, *Tomb of Siphtah*, pp. xxvi, xxvii.

[30] *Documents de Fouilles Inst. fr. Caire*, X, 15, 18, 22, 50–51.

Newberry,[31] Peet,[32] Quibell,[33] Sandman,[34] Schiaparelli,[35] Speleers,[36] Spiegelberg,[37] Steindorff,[38] Wiedemann,[39] and others. The jars illustrated and described in a number of these publications are closely similar to those from Amenhotep III's palace; and good general discussions of the uses, contents, forms, materials, methods of sealing, stamping, and labeling of such jars will be found in Bruyère's reports on his excavations at Deir el Medineh,[40] in Carter's description of the wine jars found in the tomb of Tutʿankhamūn,[41] and in the third edition of Lucas' *Ancient Egyptian Materials and Industries*.[42] The works which we shall have occasion to cite most frequently in this series of articles are Petrie's *Tell el Amarna;* Peet and Woolley's *The City of Akhenaten*, Part I; Frankfort and Pendlebury's *The City of Akhenaten*, Part II; Spiegelberg's *Hieratic Ostraka . . . in the Ramesseum* and his remarks on the Ramesseum and other jar-labels in *Zeitschrift für ägyptische Sprache*, Volume LVIII; and Gardiner's *Ancient Egyptian Onomastica*. These will be referred to hereinafter simply as *Amarna, City I, City II, Ramesseum, ZÄS* LVIII, and Gard. *On*.

With the exception of six examples in Cairo[43] and two in the Brooklyn Museum[44] the jar-labels dealt with here are in the Metropolitan Museum of Art.[45] The table of Figure 16 gives the distribution of the labels by date and subject matter and contains in itself a good deal of information on the palace supplies and activities during seventeen of Amenhotep III's last thirty years on the throne. Needless to say, the vast majority of the individual inscriptions are fragmentary and the 217 examples listed under "?" in the next to the last column of the table are so fragmentary as not to be certainly identifiable. The remaining 1,183 labels fall into 260 more or less distinct types, hieroglyphic transcriptions of which appear in Figures 4–16. Some of the types are represented by one example only. Aside from these the distribution of the labels by types is as follows:

Types	Examples of Each
8, 16, 18, 29, 30, 31, 49, 52, 57, 58, 66, 67, 70, 73, 80, 106, 107, 110, 111, 117, 132, 135, 140, 142, 143, 147, 151, 154, 155, 156, 166, 169, 173, 176, 181, 191, 192, 193, 196, 197, 200, 206, 207, 211, 215, 219, 226, 247, 256	2

[31] *PSBA*, XXV, 137–38.

[32] *JEA*, XIV, 182.

[33] *Tomb of Yuaa and Thuiu* (*Cat. gén. Mus. Caire*, Nos. 51001–51191), p. vi.

[34] *Bibl. Aeg.*, VIII, 180–83.

[35] *La Tomba . . . dell'architetto Cha*, 153–54, Fig. 137.

[36] *Rec. des Inscr. ég. des Musées Royaux . . . à Bruxelles*, Nos. 185, 187, 188, 206–31.

[37] *Hieratic Ostraka and Papyri . . . in the Ramesseum*, Pls. XIX–XXXVIII, Nos. 138–325; *ZÄS*, LVIII, 25–36, cf. 51–52; in Petrie, *Six Temples at Thebes*, pp. 21, 29, Pls. V, XIX; and in Quibell, *loc. cit.*

[38] *Aniba*, II, 151–52, Pl. C.

[39] *ZÄS*, XXI, 33–35.

[40] See especially the report for 1934–35 (*Fouilles Inst. fr. Caire*, Vol. XVI), pp. 342–43.

[41] See n. 19, above.

[42] See especially pp. 23–33.

[43] All of Type 85. There appears to be no publication of other jar-labels from the palace in Cairo, although Daressy mentions having found a number in 1888 (*Ann. Serv.*, IV, 169–70), and some from the Metropolitan Museum's excavations of 1910–20 were retained by the Cairo Museum in the yearly divisions of finds. A quantity of jar-sealings and other objects apparently from Daressy's work in the palace are published by Quibell, *Archaic Objects* (*Cat. gén. Mus. Caire*, Nos. 11001–12000, 14001–14754), Nos. 11424–11493, pp. 90–102, Pls. XVI–XVIII.

[44] One example of Type 16 and one example of Type 73 (Accession No. 48.66). Both are from Tytus' excavations in the Palace of the King and are apparently the two "ostraka" mentioned by him on p. 10 of his *Preliminary Report* (see n. 3, above). I am grateful to Mr. Cooney for permission to include these two interesting labels in the present corpus.

[45] I.e., 1,392 examples. Only sixteen of these (of Types 24, 48, 59, 80, 96, 130, 138, 143, 158, 184, 206, 207, 211, 219, and 239; see Figs. 2, 3) have been accessioned (Nos. 17.10.2–16, 18); but all have been copied, sorted, and arranged in filing cabinets where they are readily available to students.

TYPES	EXAMPLES OF EACH
9, 17, 21, 23, 32, 33, 34, 36, 37, 40, 41, 60, 79, 84, 88, 104, 112, 115, 129, 134, 162, 165, 170, 190, 218, 227, 252	3
6, 10, 14, 45, 63, 76, 78, 105, 109, 127, 153, 159, 161, 188	4
15, 62, 71, 93, 121, 133, 221	5
20, 39, 48, 59, 74, 131, 136, 145, 239	6–7
54, 55, 56, 77, 94, 96, 99, 108, 130, 163, 164	8–15
85, 89, 91, 92, 95, 100, 103, 160	19–38

Type 101..... 85 examples Type 158..... 296 examples

The inscribed jar fragments were found, in the midst of thousands of uninscribed pieces of the same jars, in the ruined magazines attached to the various palace buildings, in the much disturbed rubbish mounds adjacent to these buildings, and in the houses of the workmen's villages. Since the exact provenances of the various types of labels are frequently of some significance to our knowledge of the history of the palace and its occupants, it seems desirable to list the types once more—this time according to the parts of the palace complex in which they were found (refer to Fig. 1):

TYPES	PROVENANCE
7, 10, 15, 16, 17, 26, 39, 49, 55, 60, 64, 71, 73, 77, 78, 84, 85, 87, 88, 89, 119, 124, 150, 153, 189, 195, 197, 219, 221, 227, 259	Palace of the King
89	Ho.1.W
4, 6, 23, 34, 42, 44, 45, 46, 47, 48, 50, 52, 53, 54, 55, 56, 59, 60, 62, 63, 65, 66, 69, 72, 80, 85, 86, 101, 127, 147, 158, 164, 178, 182, 225, 228, 240	Middle Palace
38, 57, 89, 143, 151, 205, 206, 207, 208, 212, 213, 214, 251	Ho.3.W
40, 54, 55, 75, 77, 85, 91, 96, 101, 148, 164, 176, 180, 190, 201, 218	West Villa B
9, 11, 34, 56, 59, 85, 91, 92, 99, 130, 131, 132, 134, 158, 163, 164	North Palace
1, 37, 89, 158 (290 examples), 209	Temple of Amūn
12, 14, 24, 54, 59, 79, 85, 88, 92, 95, 96, 98, 100, 141, 146, 147, 153, 183, 187, 211, 221, 232, 244, 249, 253	South Village
10, 18, 22, 25, 29, 30, 32, 36, 56, 67, 70, 77, 78, 79, 81, 85, 89, 95, 97, 101, 105, 108, 110, 112, 113, 125, 133, 137, 139, 145, 154, 157, 160, 162, 164, 166, 176, 185, 200, 202, 217, 218, 219, 237, 239, 252, 258	Rubbish Mounds

The photographs of Figures 2 and 3 show specimens of most of the principal classes of jar-labels and give some idea of the variety of individual handwritings found in these inscriptions.[46] Many of the inscribed jar fragments bear, in addition to a relatively fresh label, the faded or partially erased remains of one or more earlier labels, showing that the jars when empty were often sent back for refilling, resealing, and relabeling—though not necessarily to the same vineyards, breweries, or stock-farms from which they had come originally. Among the labels found side by side or one above the other on the same pieces of pottery are Nos. 1 and 209, 9 and 33, 10 and 138 (see Fig. 2), 22 and 33, 42 and 62, 68 and 63, 77 and 188, 101

[46] See also *Chron. d'Ég.*, 1949, Fig. 9 (opp. p. 96), wherein are illustrated fragmentary examples of Types 60 (A), 62 (D, C, F), 143 (E), and 165 (B); and Lansing, *op. cit.*, p. 8, Fig. 3 (Type 158). Cf. Griffith, *Hieratic Papyri from Kahun and Gurob*, Pls. XXXVIII, XXXIX (Möller, *Paläographie*, II, Pl. III and Col. 3); *Amarna*, Pls. XXII–XXV; *City I*, Pl. LXIII; etc. The labels illustrated in Figs. 2 and 3 are in several cases variants of those selected for transcription in Figs. 4–16, which, though more complete and more characteristic of their types, are not always clear enough for good photographic reproduction.

and 108, 110 and 112, and 96, 167, 168, and 169. Since two or more parallels exist for almost every phrase found in the labels, the reading of individual hieratic signs or groups is rarely open to question; and it was felt that facsimile copies or photographs of all save a few of the inscriptions could be dispensed with. A paleographic study of this large corpus of well-dated hieratic texts would undoubtedly repay the effort involved. For the time being, however, we are concerned chiefly with the contents of the inscriptions, and in the second article of this series we will consider briefly the significance of their dates, the references to the *Sed*-festivals and other feasts for which the contents of the jars were prepared, the nature of the products listed, the names and locations of the royal estates and other sources of supply, and, above all, the names and titles of the many persons, both royal and private, whose activities during the reign of Amenhotep III are reflected in these inscriptions.

[*To be continued*]

METROPOLITAN MUSEUM OF ART
NEW YORK

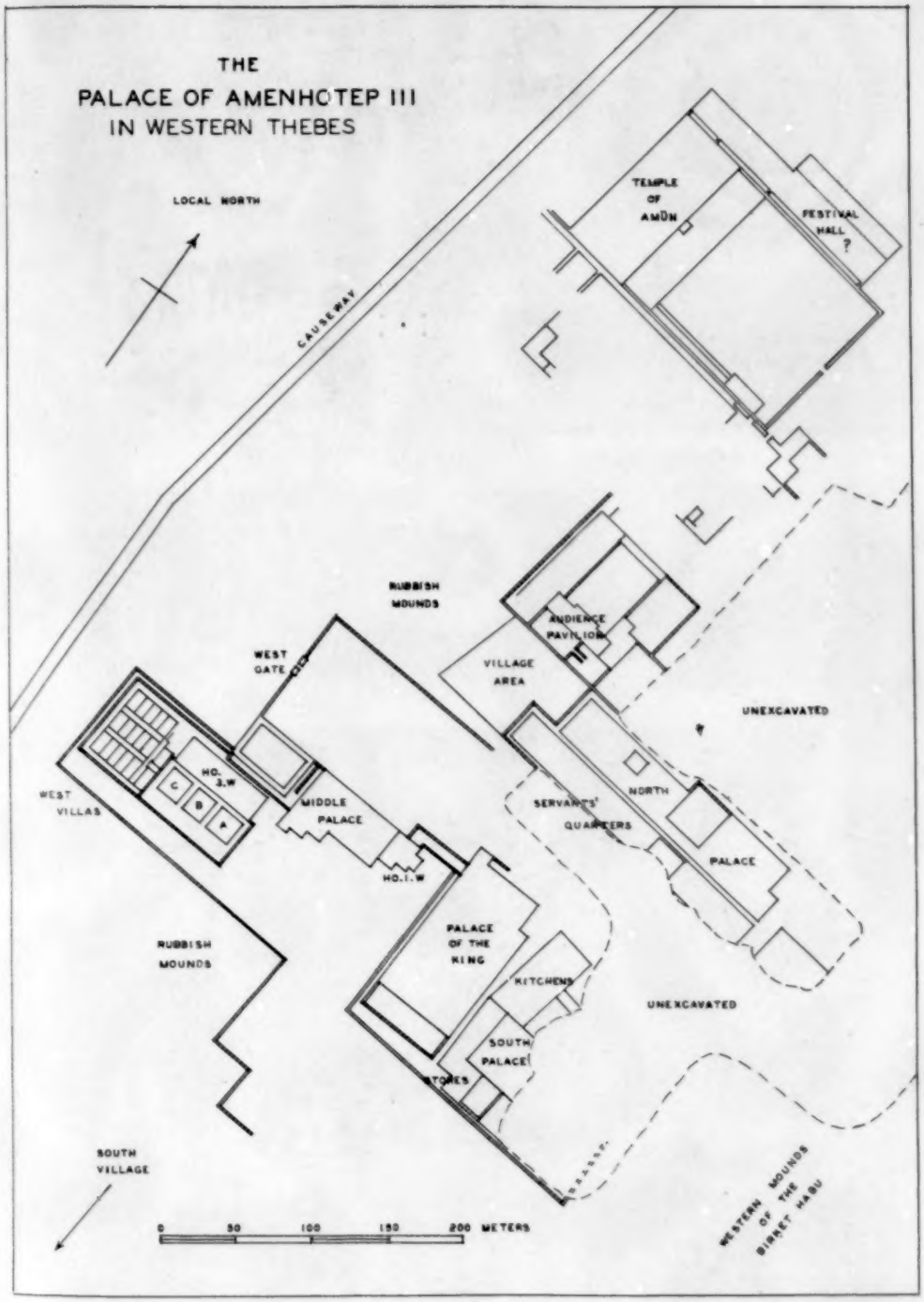
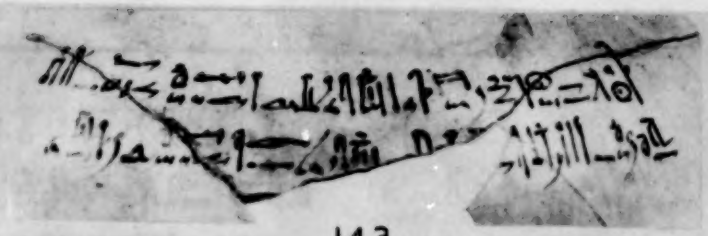
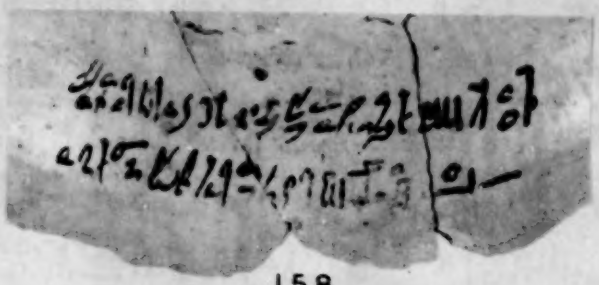

THE
PALACE OF AMENHOTEP III
IN WESTERN THEBES
LOCAL NORTH
CAUSEWAY
TEMPLE OF AMŪN
FESTIVAL HALL ?
RUBBISH MOUNDS
AUDIENCE PAVILION
VILLAGE AREA
WEST GATE
UNEXCAVATED
HO. 3.W
C
B
A
WEST VILLAS
MIDDLE PALACE
SERVANTS' QUARTERS
NORTH PALACE
HO.1.W
PALACE OF THE KING
RUBBISH MOUNDS
KITCHENS
UNEXCAVATED
SOUTH PALACE
STORES
SOUTH VILLAGE
0 50 100 150 200 METERS
WESTERN MOUNDS OF THE BIRKET HABU

FIG. 1

FIG. 2

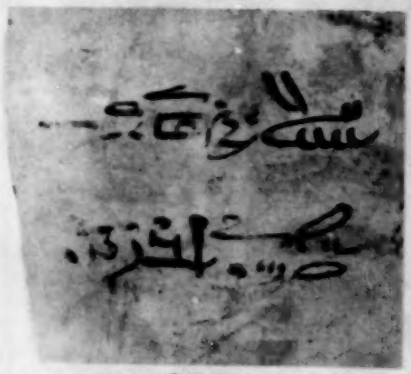


143

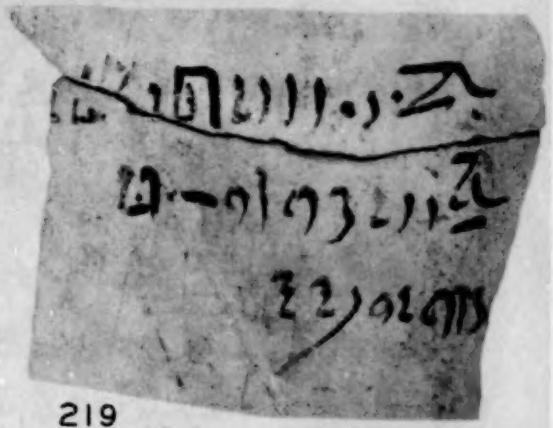


158

184

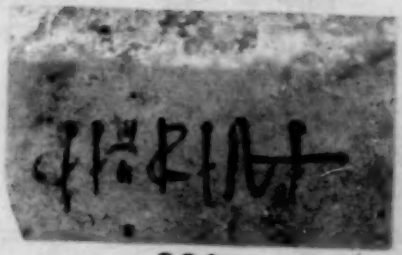


206



219

211



239

FIG. 3

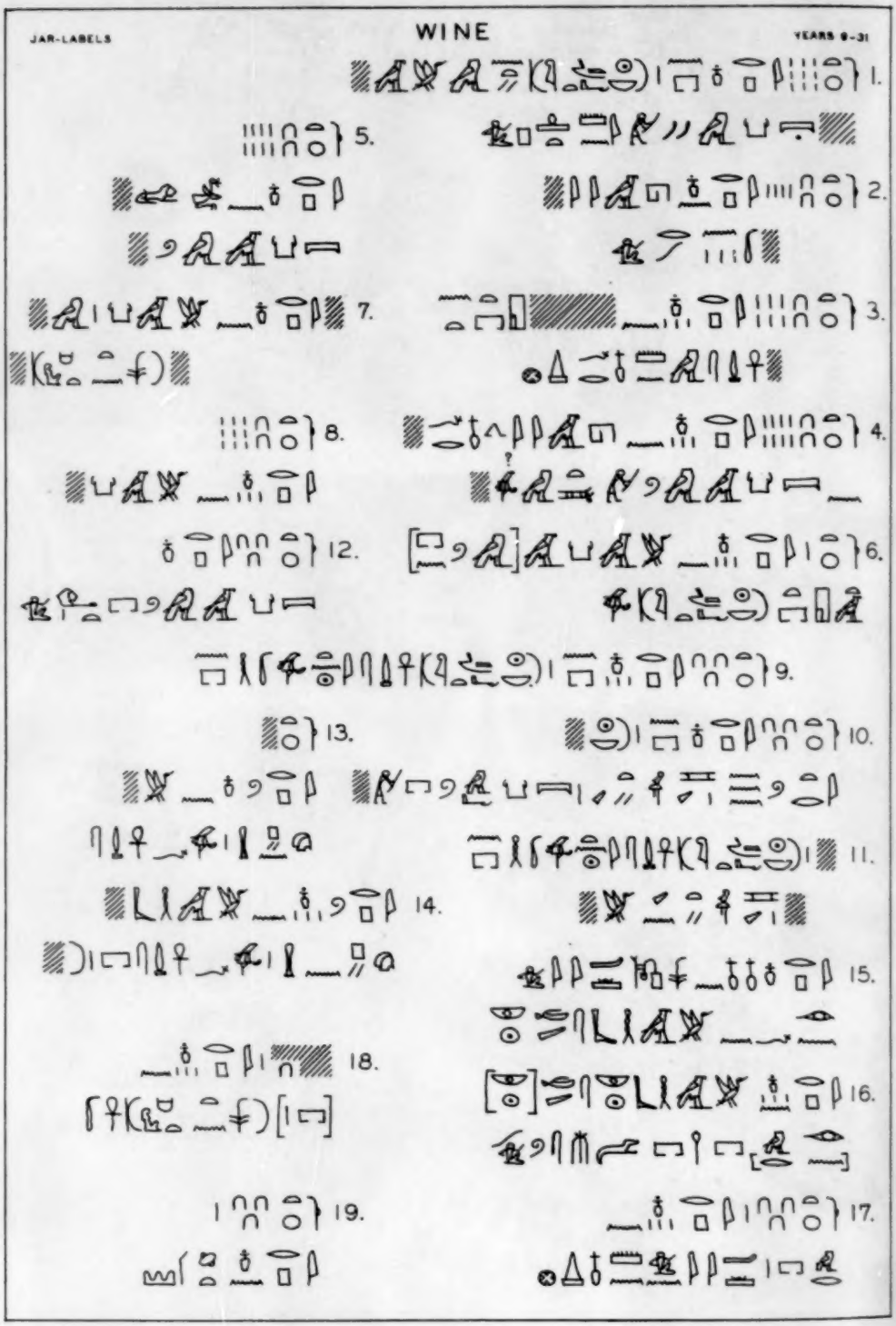


FIG. 4

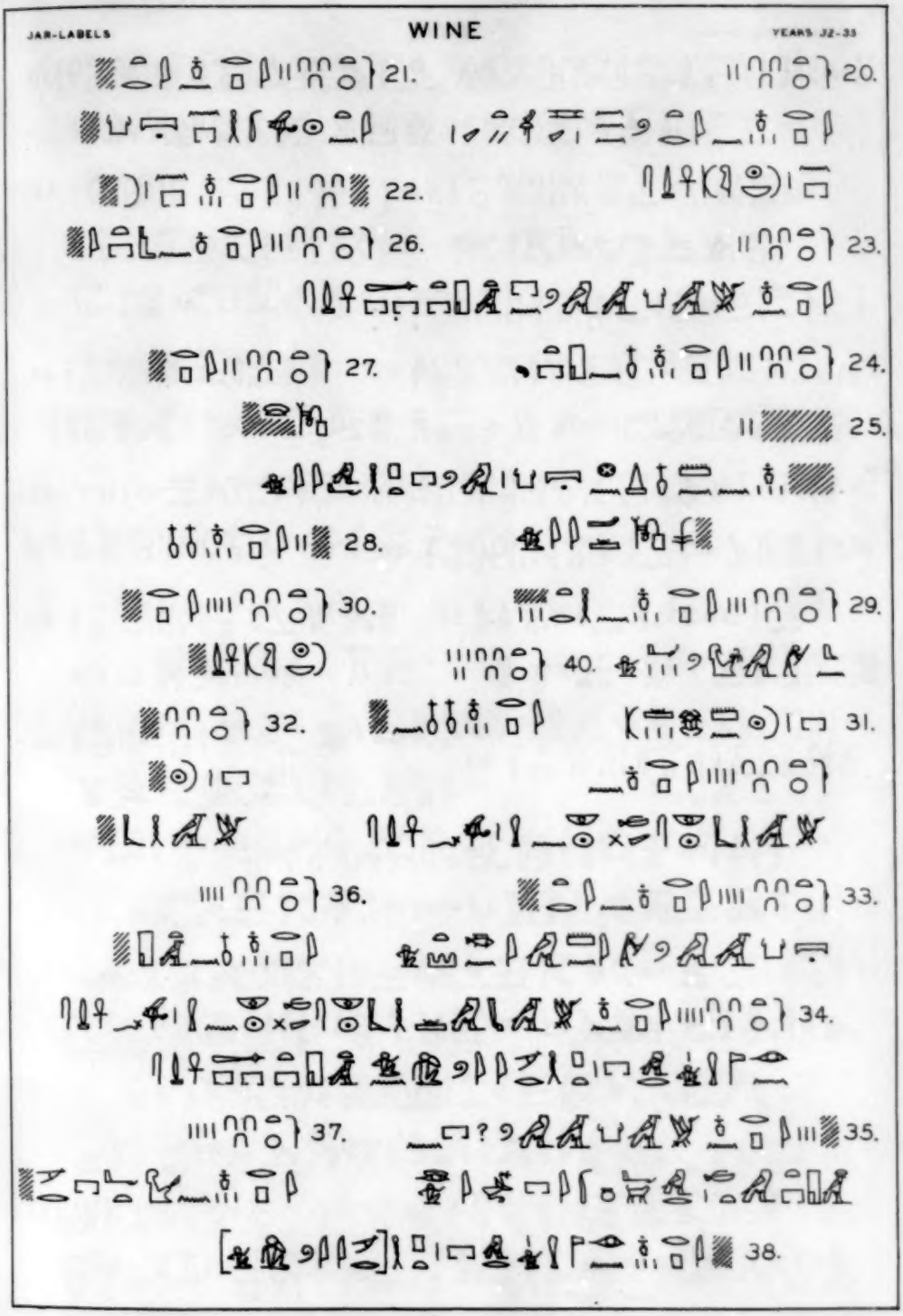


FIG. 5

FIG. 6

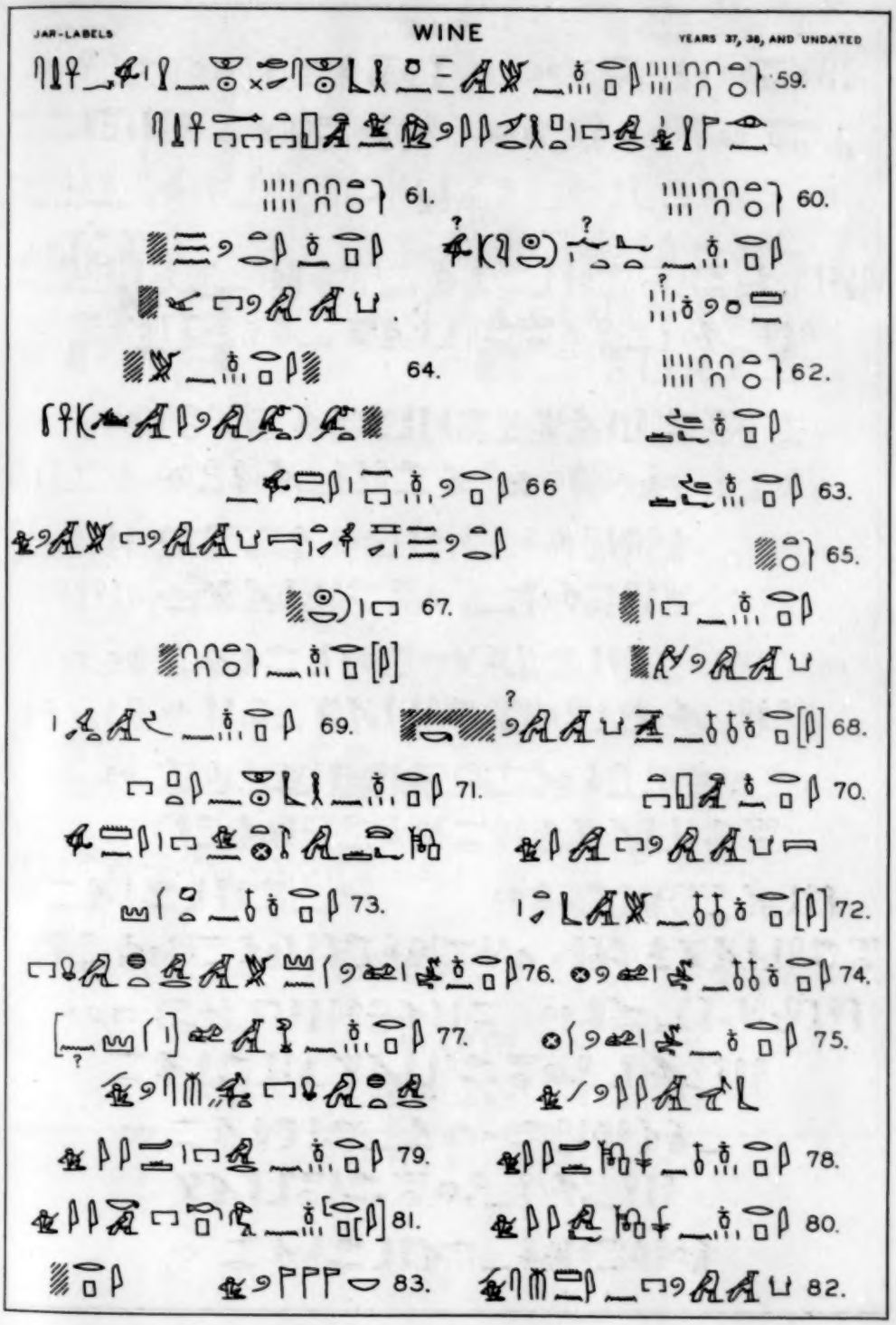

59.
60.
61.
62.
63.
64.
65.
66
67.
68.
69.
70.
71.
72.
73.
74.
75.
76.
77.
78.
79.
80.
81.
82.
83.

FIG. 7

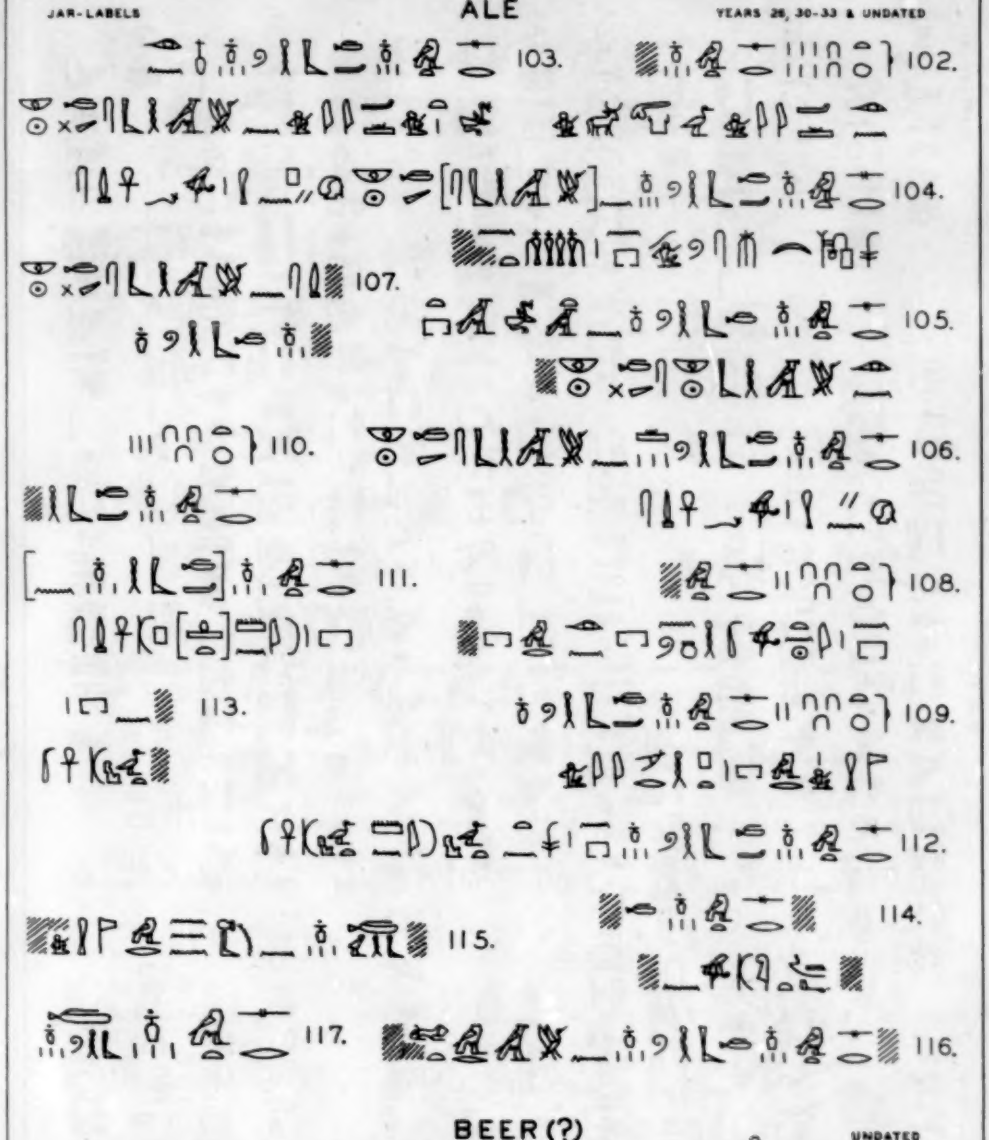
JAR-LABELS
WINE
UNDATED
84.
85.
86.
87.
88.
89.
ALE
YEARS 29 & 30
90.
TRACES
91.
92.
93.
94.
95.
96.
97.
98.
99.
100.
101.

FIG. 8

JAR-LABELS

ALE

YEARS 26, 30-33 & UNDATED



BEER (?)

UNDATED

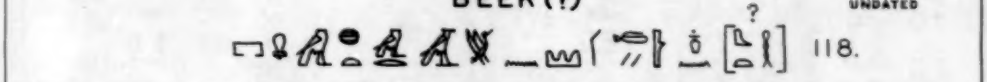


FIG. 9

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FAT

JAR-LABELS

YEARS 20-30

FIG. 10

134.
136.
137.
138.
139.
140.
141.
142.
143.
143A.
144.
145.
146.
147.
148.
149.
150.
151.
152.
153.
154.

FIG. 10

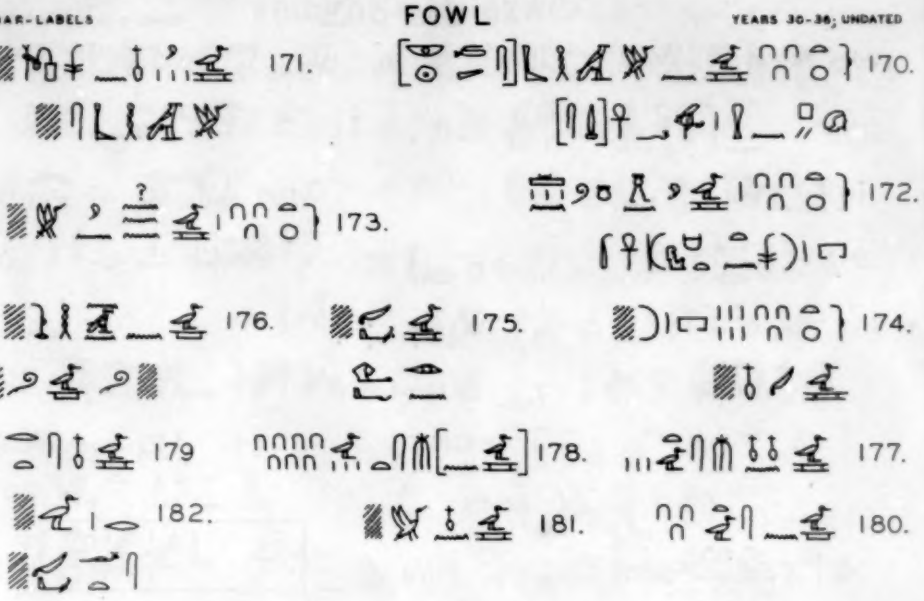
FIG. 11

FIG. 12

JAR-LABELS

FOWL

YEARS 30-36; UNDATED



BEN OIL

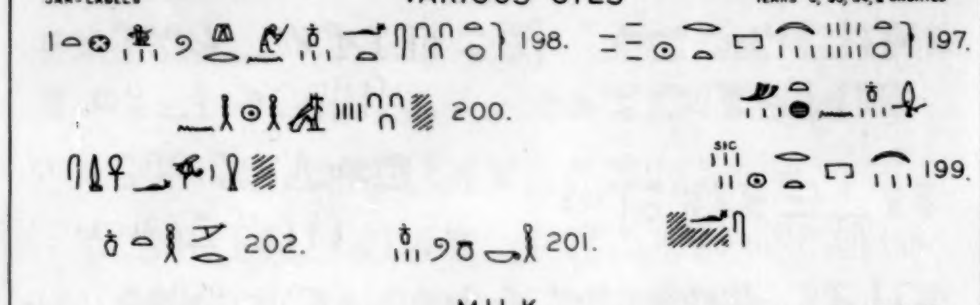
YEARS 30-37 & UNDATED

FIG. 13

JAR-LABELS

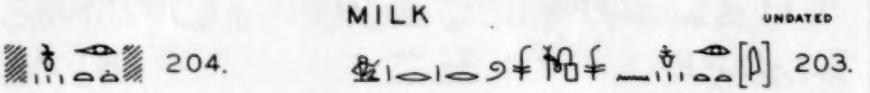
VARIOUS OILS

YEARS 8, 30, 34, & UNDATED



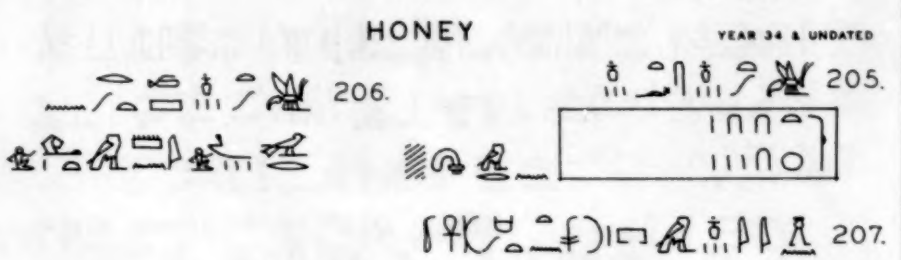
MILK

UNDATED



HONEY

YEAR 34 & UNDATED



INCENSE

YEARS 30, 35, & UNDATED

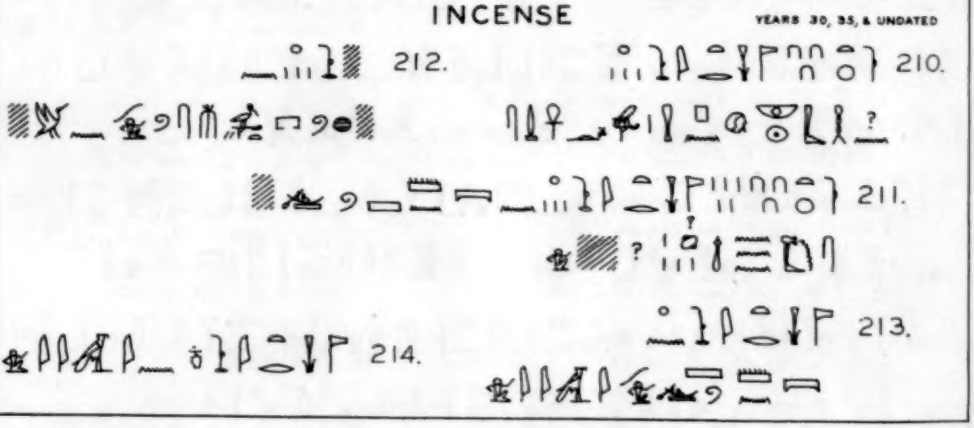


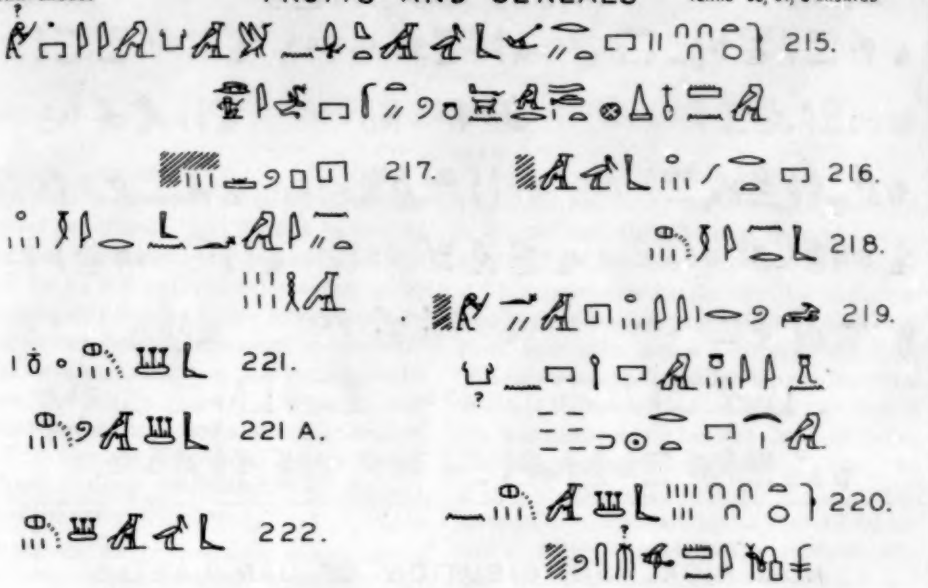
FIG. 14

UNIVERSITY OF CHICAGO ORIENTAL INSTITUTE MUSEUM

JAR-LABELS

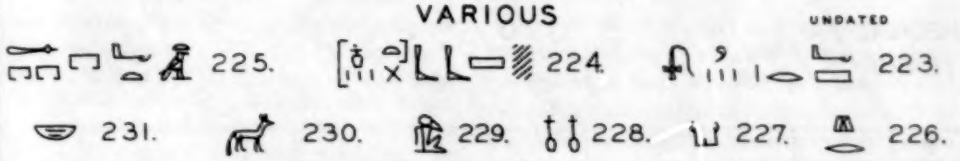
FRUITS AND CEREALS

YEARS 32, 37, & UNDATED



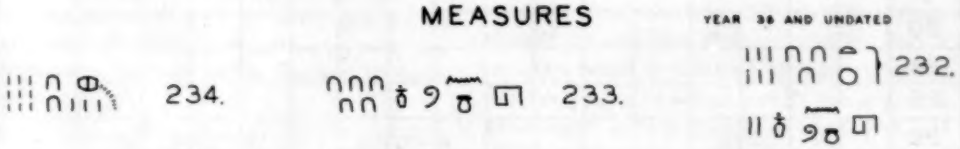
VARIOUS

UNDATED



MEASURES

YEAR 36 AND UNDATED



NAMES AND TITLES

YEAR 33 AND UNDATED

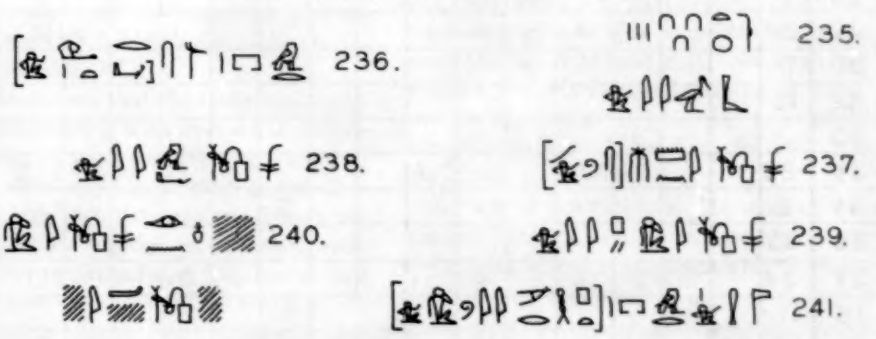


FIG. 15

JAR-LABELS

NAMES AND TITLES

UNDATED

NUMERICAL DISTRIBUTION OF JAR-LABELS

REGNAL YEARS	WINE	ALE	BEER	FAT	MEAT	FOWL	BEN OIL	VAR. OILS	MILK	HONEY	INCENSE	FRUITS	VARIOUS	MEASURE, NAMES	?	TOTALS
8							2									2
9	1															1
20			1													1
24	1															1
25			1													1
26	1	1														2
28	7*															7
29	2	1														3
30	22	186		8	4	3	4	1			1		1ST HEB-SED			229
31	7				1	3										11
32	18	13		3								1				35
33	2	2		3										1		8
34	25			39	337			2		1			2ND HEB-SED			404
35	6			1							2					9
36	33			1		1	1						1			37
37	54			3	16		4					1	3RD HEB-SED			78
38	10			6												16
?	96	95	1	25	17	11	13	7	2	6	3	14	12	2	34	217	555
TOT.	285	298	1	91	375	18	22	12	2	7	6	16	12	3	35	217	1400

* INCLUDING 5 EXAMPLES DATED TO "YEAR 1" (OF AKHENATEN ?).

FIG. 16

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A NOTE ON I KINGS 18:27

LEO HAYMAN

THE English Revised Version translates this verse as follows: "And it came to pass at noon, that Elijah mocked them, and said, Cry aloud: for he is a god; either he is musing, or he is gone aside, or he is in a journey, or peradventure he sleepeth, and must be awaked." The American Translation, the version of the Jewish Publication Society of America, and Moffatt present an essentially similar rendering. C. F. Burney, *Notes on the Hebrew Text of the Books of Kings*, annotates the middle portion of the verse as follows:

כי שיג לו) 'Surely meditation, or surely going aside occupies him, or surely a journey occupies him!' שיח 'meditation,' as producing a condition of abstraction (Pesh. ܫܘܚܐ), is preferable here to 'conversation' (LXX, Luc., Vulg., Targ.). שיג (for סרג from סרג 'turn back'; cf. סָרוֹג, 2 Sam. 1:22 for סוג) is usually explained, after Jarchi, as a euphemism. But omission of כי שיג לו in LXX, Luc., suggests that these words may be an erroneous repetition of the former. So Klo. The meaning of כי דרך לו is brought out by paraphrase of LXX, Luc. *καὶ ἅμα μὴ ποτε χρηματίζει αὐτός*, 'perhaps he has business to transact!'

W. E. Barnes, "Cambridge Bible," follows a similar interpretation but notes regarding the phrase *ʿᵉkî derek lô* that "the Heb. phrase is found here only in the Old Testament, and the meaning is not certain. Symmachus, 'he is engaged in business.' "

It seems obvious that the traditional interpretation furnishes us with no real insight into the meaning of the verse; its true sense had evidently become lost at an early period. It is suggested here that the purport of the verse (inferred partly from the context and partly from the known character of the Baal as lord of the produce of the soil; cf. Hosea, chap. 2, esp. 2:10) is as follows: "And it came to pass at noon, that Elijah mocked them, and said, Cry aloud: for he is a god; surely the growth of vegetation, and surely the florescence of the vine is his, and surely the treading of the wine is his; perhaps, then, he is in a drunken stupour, but will awaken."

This interpretation brings the ideas expressed successively by *ʾĕlôhîm*, *śîaḥ*, *śîg*, *derek*, and *ǰāšēn* into a natural consecution, ironically relating them all to the single central theme of the essential character of the Baal as this was supposed by his own devotees to be; and the devastating anticlimax of *ǰāšēn*, "he is in a drunken stupour," or "he is drunk" gives point to the assertion of the biblical author that Elijah "mocked" the priests of Baal. This interpretation may be supported etymologically as follows:

1. *śîaḥ* offers no difficulty in so far as its general reference is concerned, though there may be some question as to the nuance of signification which ought to be attributed to it in the present context. Its use as a concrete noun with the meaning "vegetation" is certified beyond any doubt by Gen. 2:5, and the present context admits this meaning readily; but a smoother sense is obtained by construing the word as a noun of action and by translating it accordingly as "the growth of vegetation." It may be noted, in justification of the latter construction, that the cognate Assyrian verb *šâḫu* (*šiḫ*), which is applied to plants and trees, denotes the process of their growth; while the use of the segholate form in Hebrew as a noun of action is thoroughly well attested: cf. *hereg*, Isa. 30:25, Esther 9:5; *daǰîš*, Lev. 26:5; *ʾōsep*, Isa. 33:4; *ʾĕbel*, Jer. 6:26; *bᵉkî*, Ps. 6:9, Jer. 31:15, Isa. 22:12.

In view of the fact that the sense of the word in Gen. 2:5 is more closely determined by its being placed in construct with the genitive *haśśādeh*, the question might be raised as to whether the meaning "vegetation" may legitimately be assigned to it in its use without qualification in the present passage. The answer to this question may be ascertained partly

from the use of the word in Gen. 21:15, Job 30:4, 7, and partly from the example of such words as *tᵉbûʾāh*, *ḥajjāh*, *dag*, *ʿôp*, which equally denote the produce of the soil, animals, fish, birds, whether used without qualification or placed in construct with the genitives "the field," "the earth," "the sea," "the heavens," respectively.

For the use of *śîaḥ* to denote vegetation generally rather than any particular species of vegetation, see S. R. Driver's note on Job 30:4, "International Critical Commentary," and reference there given to *ZATW*, 1915, page 125.

2. שׂיג occurs in New Hebrew, in the form סיג, in a sense which Jastrow gives as "growth, sproutings, esp. luxuriant growth." He cites in illustration of this meaning the phrase *hassîg šel ʾešk^elôt*, which he translates as "the foliage covering the clusters of grapes." For the interchange of שׂ and ס, cf. Burney's note quoted above and Gesenius-Kautsch, *Hebrew Grammar*, § 6 *k*. As in the case of *śîaḥ*, so *śîg* has here been construed as a noun of action, viz., "florescence," although the context admits also of its being construed as a concrete noun, viz., "foliage."

As to the question as to whether *śîg*, in the absence of any closer determination by some such noun as *ʾešk^elôt*, can be taken as implying a specific reference to the vine, no positive evidence, other than the present context itself, can be offered on this point. It is conceded that in this connection *śîg* stands on a different and less certain footing than does *śîaḥ*.

3. *derek* does not elsewhere occur in the sense "the treading of grapes," "the treading of wine." This sense, however, is easily derivable, in complete conformity with the analogy of *hereg* and the other segholate nouns already mentioned, from the meaning of the verb *dārak* as used in Amos 9:13, Mic. 6:15, Isa. 16:10. As to the question as to whether *derek*, in the absence of any closer determination by some such noun as *ʿānābîm*, *jajin*, can be taken as referring specifically to the treading of wine, this question is conclusively answered in the affirmative by the use of the verb in Judg. 9:27 and of the participle in Jer. 25:30.

4. *jāšēn* offers no difficulty in the sense attributed to it. It is ordinarily used of natural sleep, but also not infrequently denotes the slumber of a stupor: in Gen. 2:21 and I Sam. 26:12, the sleep of a trance; and in Jer. 51:39, 51:57, Ps. 78:65, as here, the slumber of a stupor induced by indulgence in liquor.

5. The usage of *jāqaṣ* corresponds with that of *jāšēn:* it denotes the act of awakening either from natural sleep or from the slumber of a stupor; cf. especially Gen. 9:24, *yajjîqeṣ nôaḥ mijjênô*, as well as Ps. 78:65; cf. also I Sam. 26:12.

It may be stated in conclusion that the real difficulty for the present interpretation of this verse lies in the fact that it assigns to *śîg* and *derek* meanings which they do not otherwise express in the Hebrew Bible; on the other hand, the occurrence here of uncommon meanings for common words enables us readily to understand why the translators of the early versions should have experienced difficulty with the verse.

BEVERLY HILLS, CALIFORNIA

BOOK REVIEWS

Pour faire aimer l'art Egyptien. By JEAN CAPART. Bruxelles: Fondation Egyptologique Reine Elisabeth, 1949. Pp. 76+80 pls.

The book is brief; there are only sixty-one pages of text, with a good general Introduction, remarks on the art and history of Egypt followed by sections on architecture, sculpture, reliefs, painting, and the minor arts which are illustrated by eighty plates. The editors apparently received the manuscript only shortly before Professor Capart's death, and circumstances limited the selection of plates. The result is unfortunate, for with few exceptions the plates have no claim to freshness and consist of the stock-in-trade subjects used in standard works of the past half-century, the Cairo Chephren, the Turin Ramesses II, the lion from Soleb, Ranofer, etc. The illustrations are good and the objects illustrated mostly fine, but they can almost all be found in any number of books. One of Capart's great achievements was the presentation of obscure and interesting material, and irrespective of his texts many of his volumes will remain important reference works for their illustrations of otherwise unpublished material. This book has no claim to that use. Its utility is still further limited by the absence of measurements and the frequent absence of any identification of medium. But these are defects of format and are no fault of the author.

Of the text less than three pages each are devoted to the sections on architecture, painting, and the minor arts. They require no comment. The bulk of the text is devoted to sculpture in the round and reliefs, and correctly, for they form so large and important a section of surviving Egyptian art. On this text it is difficult to comment, for it contains nothing controversial and little or nothing that is incorrect. But it must also be recorded that it says nothing that has not already been said many times before, and in some cases said far better. This text provides a running commentary to the plates, occasionally commenting on facts too seldom stressed, such as the close interrelation between calligraphy and representations, and the paucity of statues of gods in the Old Kingdom. It seems to me that Capart's observations on Egyptian art are largely subjective or romantic, an ideal point of departure for the lecture platform but less suited to print. It is to this emotional approach that we must attribute his use of the inept *jolie* for the face of the Khertihotep statue in Berlin and *superbe* for the torso on Plate 55 better described by *beau*. To stress the great change in Egyptian art of the Amarna age, Capart on page 46 contrasts a statue of Akhnaton with the famous diorite Chephren in Cairo. Surely had he stopped to consider the general trend of Egyptian art in the second half of the Eighteenth Dynasty he could have made a fairer and more scientific comparison, say, the colossal heads of Amenhotep III from his funerary temple, now in the British Museum, which would reveal that Amarna art was not entirely without ancestry.

Despite the editor's description of the book as "*un testament spirituel*," surely a misunderstanding of Capart's real opinion, it is a work of popularization of Egyptian art intended for the average reader. As such it is readable and valuable, for it will certainly attract a certain type of reader. The decline of popular interest in Egyptology during the past three-quarters of a century is depressing, and Capart did much to attract interest and support by his infectious enthusiasm, which is vividly apparent in this latest addition to his long bibliography.

JOHN D. COONEY

Brooklyn Museum

Glass and Glazes from Ancient Egypt. By ELIZABETH RIEFSTAHL. Brooklyn: Brooklyn Museum, 1948. Pp. 24+34 figs. $0.40.

Mrs. Riefstahl describes here the nature of glass, glazes, and fayence, how they were made, and the gradual increase in their use during Egyptian history. The wide variety of objects made from these materials is illustrated by photographs showing forty-three pieces in the Brooklyn Museum or on loan there. They range in date from the Late Old Kingdom to the Roman period. Most are examples of normal types such as fayence animal figures, ushebtis, amulets, a *ḥes*-jar and bowl, glazed steatite kohl jars, and small glass vessels. Some pieces, particularly a fayence group showing three men seated at a feast (Fig. 7), dated to the Late Old Kingdom, and a glazed steatite funerary barque with the dead man and his suite (Fig. 6), perhaps of the Late Middle Kingdom, are much more unusual so that one regrets that Mrs. Riefstahl has not discussed them in greater detail.

This booklet is an excellent example of its kind, giving us a summary of the essential information concerning a particular field of Egyptian archeology and also making known a number of unpublished objects.

HELENE J. KANTOR

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Hethitisches Elementarbuch, Erster Teil: *Kurzgefasste Grammatik*. By JOHANNES FRIEDRICH. Indogermanische Bibliothek. Erste Abteilung, Erste Reihe: Grammatiken, Band 23¹. Heidelberg: Carl Winter's Universitätsverlag. 1940. Pp. xiii+108.

Hethitisches Elementarbuch, Zweiter Teil: *Lesestücke in Transkription, mit Erläuterungen und Wörterverzeichnissen*. Indogermanische Bibliothek. Erste Abteilung, Erste Reihe: Grammatiken, Band 23². Heidelberg: Carl Winter, Universitätsverlag. 1946. Pp. viii+131.

In contrast to numerous grammars, glossaries, and chrestomathies of cuneiform Hittite published in English and French, the German scholars, who have contributed so much to the decipherment, interpretation, and publication of cuneiform Hittite texts, had produced nothing of the kind for the use of either scholars or students. The *Hethitisches Elementarbuch* by Johannes Friedrich, one of the outstanding Hittitologists of our time, is supposed to fill up the lacuna at least in the field of instruction. The first part contains a concise grammar of cuneiform Hittite plus a small chapter devoted to the elucidation of the Sumerian and Akkadian writings and languages as used in cuneiform Hittite. The second part contains a selection of Hittite texts in transliteration (Friedrich calls it "Transkription") with annotations and glossaries. The third part, to be published in the farther future, will include a "Hethitisches Keilschriftlesebuch."

As was to be expected from a scholar of Friedrich's caliber, he fulfilled his task admirably from both scientific and pedagogical points of view. I wish to single out, however, two points on which I might disagree with the author. From experience in my classes I should say the pages 66–80 devoted to annotations are too concise to be of real help to a beginner in Hittitology. I have a stronger objection to register against marking the vowel quantity in the transcription of Hittite words such as *iššāš*, *iššī*, or *pēdan* (but *pēdi*). One thing is transliteration, in which the above words should be rendered sign by sign as *iš-ḫa-a-aš*, *iš-ḫi-i*, *bi-e-da-an* (or *pi-e-da-an*), and another is transcription, which is supposed to render linguistic forms, not spellings. In the spellings of hieroglyphic Hittite *a-i-a-ta-a* for *aiata*, "he will make," of Achemenid Persian *ha-da-a* for *hata*, "together," of cuneiform Hittite *iš-ḫi-i* for *iššī*, "to the lord," the *scriptio plena* is used to show either the quality of the vowel (*iššī*, not *iššē*) or that the final vowel is pronounced (*aiata*, not *aiat*), but in no case does it serve to indicate vowel quantity.

I. J. GELB

Oriental Institute

Recherches sur le vocalisme, le consonantisme et la formation des racines en "nostratique," ancêtre de l'indo-européen et du chamito-sémitique. By A. CUNY. Paris: Librairie d'Amerique et d'Orient, Adrien-Maisonneuve, 1943. Pp. vii+164.

Invitation à l'étude comparative des langues indo-européennes et des langues chamito-sémitiques. By A. CUNY. Bordeaux: Éditions Bière, 1946. Pp. 275.

Essai comparatif sur le vocabulaire et la phonétique du chamito-sémitique. By MARCEL COHEN. Bibliothèque de l'École des Hautes Études, publiée sous les auspices du Ministère de l'Éducation Nationale. Sciences Historiques et Philologiques. Deux cent quatre-vingt-onzième fascicule. Paris: Librairie Ancienne Honoré Champion, Éditeur, 1947. Pp. xi+248.

One of the most fascinating and at the same time most trying subjects in the field of comparative linguistics is that of the relationship between the various languages grouped together under the term "Nostratic." The term was introduced first by Holger Pedersen (on the basis of Latin *noster*), and is now often used as a designation for the over-all family of Indo-European and Semito-Hamitic languages. But even this broad grouping is not inclusive enough to those scholars who would like to suggest further relationships between Indo-European and Finno-Ugric, on the one side, and between Hamitic and Hausa and other African languages, on the other. Be it as it may, certain language families are well established and at the present time generally accepted. One of them is the Semitic-Egyptian group, or rather a group including Semitic and all those languages which according to one scholar or another belong to Hamitic (Egyptian including Coptic, Berber or Libyan, Cushitic or Nilotic, and Hausa). The works of such scholars as Albright, Calice, Cohen, Ember, and Zyhlarz and the activities around the French Groupe linguistique d'études chamito-sémitiques (GLÉCS) are best evidence of progress achieved in that field. Ever since the fundamental contributions of the Danish scholar Hermann Möller, some forty years ago, work on Indo-European-Semito-Hamitic lagged behind in interest. This interest has been revived considerably in the past few years due in large measure to revolutionary discoveries in the Indo-European field by such men as Kuryłowicz (phonology) and Benveniste (root structure). A. Cuny, who in previous years had contributed a considerable number of smaller studies in the field of Nostratic, now winds up his work in the two monographs noted above. They are concerned chiefly with phonology and, to a smaller degree, with morphology and root structure of Nostratic. Marcel Cohen's book is more limited in scope, as it deals primarily with the lexicon and phonology of a group of languages which he includes under "chamito-sémitique." In addition, Cohen's book contains a very useful bibliography and history of the relationships of the Semitic and Hamitic languages.

I. J. GELB

Oriental Institute

Remarques stylistiques sur les reliefs de Malatya. By EKREM AKURGAL. Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Yayinlari No. 53. Arkeoloji Enstitüsü No. 3. Istanbul: Pulhan Matbaasi, 1946. Pp. ix+120.

The difficult problem of dating of the Hittite monuments from Malatya is subjected in this study to a scrutiny by one of the outstanding archeologists of modern Turkey. The study is remarkable for its methodology. Limiting himself to facts of descriptive nature, and avoiding carefully statements based on feelings and impressions, the author draws an evolutionary picture of the Malatya art which is at variance with all the previous reconstructions. The fact that the author purposely refused to let historical and epigraphic factors influence his conclusions is perhaps more of a blessing than assumed by H. T. Bossert in his article, "Zur Chronologie der Skulpturen von Malatya," published in *Felsefe Arkivi*, II (1947), 85–121. In the case of such controversial issues as the chronology of Malatya art, with the dates proposed by various scholars varying by as much as one thousand years, it is of some advantage to see what can be done with chronology on the sole basis of iconography. Later, such provisional conclusions can be compared with those reached independently on the basis of historical and epigraphic considerations, and a final study can be written embracing all the various approaches. In the field of Hittite art this is one of the most important desiderata.

I. J. GELB

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Istanbul Arkeoloji Müzelerinde bulunan Boğazköy tablerinden seçme metinler. By H. BOZKURT, M. ÇIĞ, and H. G. GÜTERBOCK. T. C. Maarif Vekilliği. Antikite ve Müzeler Müdürlüğü. Yayinlarindan Seri III, Sayi 1. Istanbul: Maarif Matbaasi, 1944. Pp. ix+32 pls. 250 kuruş.

Istanbul Arkeoloji Müzelerinde bulunan Boğazköy tabletleri II. By HATICE BOZKURT, MUAZZEZ ÇIĞ, and H. G. GÜTERBOCK. T. C. Millî Eğitim Bakanliği. Eski Eserler ve Müzeler Genel Müdürlüğü. Yayinlarindan Seri III, Sayi 2. Istanbul: Millî Eğitim Basimevi, 1947. Pp. ix+40 pls. 450 kuruş.

Ankara Arkeoloji Müzesinde bulunan Boğazköy Tabletleri. By DR. KEMAL BALKAN. T. C. Millî Eğitim Bakanliği. Eski Eserler ve Müzerler Genel Müdürlüğü. Yayinlarindan Seri III, Sayi 3. Istanbul: Millî Eğitim Basimevi, 1948. Pp. xi+36 pls. 500 kuruş.

The publication of cuneiform texts from Boğazköy, in previous years mainly in the hands of the Vorderasiatische Abteilung of the Berlin Museum, receives a healthy stimulus by the three volumes issued under the aegis of the Turkish Directorate of Antiquities. This is the first attempt outside Germany to initiate a new series devoted to the publication of Boğazköy texts. Their authors are H. G. Güterbock, formerly professor at the University of Ankara, now at Chicago, and three young Turkish Hittitologists: H. Bozkurt, M. Çiğ, and Kemal Balkan, all former students of Güterbock. The published tablets, now housed in the museums of Istanbul and Ankara, are almost all in fragmentary shape, but in many cases they help to reconstruct texts known from previous publications. The great majority of texts are of religious character, such as omens, oracles, rituals, and incantations, with a scattering of historical texts, letters, lists, and some other genres. The ancient languages represented in the texts are cuneiform Hittite, Hattic, Palaic, Hurrian, Sumerian, and Akkadian. Of great interest is the Akkadian letter published in Volume I, No. 34, which starts as follows: *a-na* ^{d}UTU-*ši a-bi-ia ki-bi-ma um-ma* LUGAL KUR⟨*Ha*⟩*-ni-gal-bat* DUMU-*ka-ma*. As suggested plausibly by Güterbock in *SaB*, II, 38, the unnamed king of Ḫanigalbat may be identified with Mattiwaza, the son-in-law of the great Hittite king Šuppiluliuma. The reviewer wishes to express his hope that the authors may be able to continue with the well-begun publication.

I. J. GELB

Oriental Institute

Ankara Bedesteninde bulunan Eti Müzesi Büyük Salonunun Kilavuzu = Guide to the Hittite Museum in the Bedesten at Ankara. Yazan: DR. H. G. GÜTERBOCK. Çeviren: DR. NIMET ÖZGÜÇ. Millî Egitim Bakanliği. Eski Eserler ve Müzeler Umum Müdürlüğü. Anitlari Koruma Kurulu. Seri I, Sayi X. Istanbul: Millî Egitim Basimevi, 1946. Pp. 1–51 (Turkish text) + 52–80 (English summary) + 18 pls. 130 kuruş.

Anyone who, like myself, remembers the difficulties with which, in the prewar years, the Hittite monuments had to be hunted and tracked down in the various depots scattered throughout the country cannot but welcome the decision of the Turkish Directorate of Antiquities to gather in one place all the preclassical antiquities found in Anatolia. The place chosen for this purpose is Bedesten, the old Cloth Market in Ankara, a splendid architectural piece going back to the fifteenth century. The task of transferring the Hittite antiquities to Ankara is progressing slowly but steadily. Heretofore, the monuments from Alacahüyük, Carchemish, Malatya, Sakçegözü, and some sites of less importance have been brought to Ankara and placed in exhibition halls. The guide to the Bedesten Museum prepared by H. G. Güterbock is more than the word implies, as it tackles independently the intricate problems of dating and provenience. Eighteen plates of well-chosen illustrations complete the book.

I. J. GELB

Oriental Institute

The Hittites and the Old Testament. By F. F. BRUCE. The Tyndale Old Testament Lecture, 1947. London: Tyndale Press, 1948. Pp. 28. 2*s*. 6*d*.

This is a popular monograph, well written, and with a special appeal to the general reader. In parts pertaining to the Hittites outside the Old Testament it relies chiefly upon secondary sources. A well-selected bibliography accompanies the monograph.

I. J. GELB

Oriental Institute

The Arab in the Desert: A Glimpse into Badāwin Life in Kuwait and Saʿudi Arabia. By H. R. P. DICKSON. London: Allen & Unwin, 1949. Pp. 648+maps and illustrations. $10.00.

Colonel Dickson, born in Syria and foster-mothered by a Badawin of the ʿAnizah, automatically became a blood-brother of that great and powerful desert tribe. Warm welcome awaited him and his family within Badawin tents whose doors seldom opened to receive the non-Moslem and the foreigner. He thus early came to know, and at times to share, the Badawin's daily life. His speaking Arabic from boyhood, though with no pretensions to a knowledge of classical and modern literary Arabic, helped to strengthen these early ties into a sympathetic bond which in turn has enabled the author to appreciate the Badawin's problems and aspirations in the face of rapid and far-reaching political and economic changes. This happy situation seems to have added pleasure to his duty as political officer guarding British interests in this strategic region at the head of the Persian Gulf.

The materials for the work have been through a long period of collecting and writing since 1929, the author's political duties having the first claim on his time. The approach is local and subjective. All in all, the work lacks perspective and organization, particularly in its widely scattered historical materials bearing on the rivalries, open or veiled, within the political triangle of the Banu Saʿūd, the Shammars, and the Sheikh of Kuwait, or on the revolt of the Ikhwān against Ibn Saʿūd. One is tempted here to quote the author himself, "Sir Arnold Wilson once remarked to me, 'You are a very good Political Officer, but you cannot write a d——!' so my readers now know the worst. I have simply done my best to pass on to those interested in Arabia certain knowledge which I have acquired by long residence among the Badawin, and in the peculiarly Arab town of Kuwait" (p. 9). This disarming statement of ability and purpose is in turn too modest. The author presents his readers with a great wealth of materials practically touching on every phase of Badawin life. Some of the book's forty-five chapters bear such headings as "Autumn Stirrings," "Tent Treasures," "Women's Secrets," "Badawin Warfare," "Crime," "Camel Disputes," "Hawking," "Wild Birds," "Boat Building," "Pearl Diving," "Curious Customs and Stories," and "Death, Burial, and the Hereafter." Conspicuous by its absence is some treatment of the extent and effect of the new oil industry in Kuwait and surrounding areas, where the author himself is an oil-company official. The reader's indulgence is craved in the matter of transliterating the spoken word, where, the reviewer notes, not only are the fluid vowels unstable but even the more solid consonants take on a strange and varied appearance.

Colonel Dickson's interest in Badawin life is appreciatively shared by his family, and Mrs. Dickson's contribution to the understanding of the feminine phases of that life is fully acknowledged. She has, furthermore, enriched the volume with numerous diagrams, black-and-white drawings, and colored illustrations of treasured objects of tribal life. The long list of illustrations includes in addition numerous photographs of representative places and personalities. A number of excellent maps, several appendixes, and a glossary and an index aid in the use of the materials contained in the lengthy volume. No one expecting to work and live among the Arabs of the desert should be without this very human document to supplement his or her more formal reading on the subject.

N. ABBOTT

Oriental Institute

New Discoveries at Karatepe: A Complete Text of the Phoenician Royal Inscription from Cilicia. By JULIAN OBERMANN. ("Transac-

tions of the Connecticut Academy of Arts and Sciences," Vol. XXXVIII.) New Haven: Connecticut Academy of Arts and Sciences, 1949. Pp. 50+1 pl. $1.25.

As a sequel to his study entitled "Discoveries at Karatepe," published as a supplement to the *Journal of the American Oriental Society*, Volume LXVIII, No. 3, and devoted to the interpretation of the Phoenician inscription on the statue, Julian Obermann presents now a monograph dealing with the stele inscription from the same site. The reviewer, who in cooperation with Ralph Marcus contributed two studies in the same field, published in the *Journal of Near Eastern Studies*, Volumes VII (1948) and VIII (1949), does not deem it necessary to go into a discussion of points in which he finds himself in disagreement with Obermann or with other scholars who have contributed recently to the elucidation of the Phoenician inscriptions discovered in Cilicia. A thorough discussion of the controversial points is obviated by the discovery of the hieroglyphic Hittite text, which, when fully published, will contribute the best check to the various translations of the Phoenician parallel. Already now, the partial publication of the introductory lines of the hieroglyphic Hittite text in *Oriens* I (1948), 164 ff., makes it clear that Obermann's translation of line 3 of the Phoenician inscription will have to be changed from "a mighty personage, ʾWRK, king of the Danunites" to "whom ʾWRK, king of the Danunites, made great," and of line 10 from "for I have made prosper [al]ike country and town" to "and I filled the buildings of PḪR."

I. J. GELB

Oriental Institute

Frühgeschichte und Sprachwissenschaft. Edited by UNIV.-PROF. DR. WILHELM BRANDENSTEIN, Graz. Arbeiten aus dem Institut für Allgemeine und Vergleichende Sprachwissenschaft, edited by W. BRANDENSTEIN, Graz. 1. Heft. Gedruckt mit Unterstützung der Steiermärkischen Landesregierung. Wien: Gerold & Co., 1948. Pp. 191. $4.00.

In this publication we welcome the first volume of a series dedicated to ancient history and philology and edited by scholars in Graz, Austria. While the volume contains a small number of studies in the classical field which are only of secondary importance to Orientalists, the majority of articles, directly or indirectly, touch upon the oriental field. Margit Falkner's article, "Zur Frühgeschichte des griechischen Alphabets," attempts to date the introduction of the Greek alphabet to the period between 900 and 865 on the basis of comparison with the West Semitic sources; the reviewer is inclined to agree with the proposed date. It is strange to see the well-known names of Carpenter and Ullman consistently misspelled as "Carpinter" and "Ullmann." Wilhelm Brandenstein's article, "Die alten Inder in Vorderasien und die Chronologie des Rigweda," is devoted chiefly to the discussion of the Indo-Aryans in western Asia. One misses studies by Bonfante, Dumont, Gelb, O'Callaghan, and Scheftelowitz, some of which, it is true, might have been published after the composition of Brandenstein's article. The conclusion (pp. 144 f.) that the remnants of the army of Šattuara, king of Ḫanigalbat, defeated in the middle of the second millennium B.C. by the Assyrian king Shalmaneser I,[1] were responsible for the subsequent invasion and conquest of India seems too far-fetched. In contrast to previous studies dealing with the reconstruction of the original home of the Indo-Europeans in which the distribution of the word for "beech" played such an important role, Edeltraut Passler reaches the conclusion in a short article, "Die Buchenfrage," that this word cannot be used suitably in reconstructions favoring northern European origin of the Indo-Europeans. Finally, in an article entitled "Zur Verwandschaft zwischen Finnisch-Ugrisch und Indogermanisch," H. Kronasser concludes that at the present time it is impossible to speak of an "Urverwandschaft" between the two groups of languages.

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[1] Cf. Gelb, *Hurrians and Subarians* (Chicago, 1944), p. 81.